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ABSTRACT

The manuscripts resulting from the seventeen different current issues in reading that were discussed at the thirteenth Annual International Reading Association Convention in Boston in 1968 are published in this volume. The topics include reading research, content area reading, speed reading, comprehension, reading skill sequence, reading instruction for the disadvantaged, visual and auditory modalities, programed instruction, dyslexia, teacher preparation, theories of remedial reading, and several specific methods of reading instruction. For each issue an objective paper that discusses the topic and presents research in regard to it, a pro paper that provides arguments and research in favor of the topic, and a con paper that offers limitations of the issue are given. The compiler-editor, Nila Banton Smith, presents a concluding chapter summarizing all of the many issues discussed and providing one view of the future of reading. (TO)

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CURRENT ISSUES IN READING

NILA BANTON SMITH, *Editor*
University of Southern California

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Foreword

SINCE MY FIRM BELIEF is that IRA should provide an open forum for the discussion, investigation, and evaluation of all aspects of reading, I was particularly pleased that Nila Banton Smith agreed to compile and edit this volume. The volume reflects her earnest endeavor to obtain objective evidence on major issues and at the same time provide space for pro and con viewpoints. As she indicates, this publication does not bear the burden of making evaluations. The task of judgment must be placed where it rightfully belongs—in the hands of the reader.

Current Issues in Reading could very well provide the framework for a basic course in reading or for the program of a council or reading conference. It covers all of the major aspects of reading, and certainly reflects the thinking of leaders in the field. Dr. Smith has done a masterful job of bringing together all of the vital issues on the contemporary scene. But she also treats the reader, in her concluding chapter, to a glimpse of the future.

Many thanks to Nila Banton Smith and all of the other educators who have made this volume possible. It contributes a needed dimension to the current scene.

H. ALAN ROBINSON, *President*
International Reading Association
1967-1968

CONTENTS

Foreword iii

1 How Good is Research in Reading? *Theodore Clymer*
Pro-Challenger: *Walter J. McHugh* 10
Con-Challenger: *James C. Crewe* 14

18 Are We Really Improving Reading in the Content Fields? *Leonard Courtney*
Pro-Challenger: *Douglas M. Collins* 35
Con-Challenger: *Carlton M. Singleton* 40

45 Speed Reading: Is the Present Emphasis Desirable? *Allen Berger*
Pro-Challenger: *Vearl G. McBride* 71
Con-Challenger: *Agnella Gunn* 79

85 Do We Apply What We Know About Comprehension? *Edmund H. Henderson*
Pro-Challenger: *Donald L. Cleland* 97
Con-Challenger: *Helen L. Wardeberg* 103

107 Sequence of Reading Skills in Reading: Is There Really One? *Ira E. Aaron*
Pro-Challenger: *Arthur W. Heilman* 123
Con-Challenger: *Emery P. Bliesmer* 125

134 Reading Instruction for the Disadvantaged: Is It Adequate? *Helene M. Lloyd*
Pro-Challenger: *Jo M. Stanchfield* 148
Con-Challenger: *Melvin Howards* 160

165 Visual and Auditory Modalities: How Important Are They? *Miriam Balmuth*
Pro-Challenger: *Miles A. Tinker* 178
Con-Challenger: *Anna S. Harris* 184

191 How Effective is Programed Instruction in Teaching Reading? *Edward Fry*
Pro-Challenger: *Douglas G. Ellson* 207
Con-Challenger: *Charles J. Turner* 214

224 How Effective Is i.t.a. in Reading Instruction? *Mildred A. Dawson*
Pro-Challenger: *John Downing* 238
Con-Challenger: *William B. Gillooly* 245

254 Is the Linguistic Approach an Improvement in Reading Instruction? *Ronald Wardhaugh*
Pro-Challenger: *Kenneth S. Goodman* 268
Con-Challenger: *Ann Hughes* 277

283 Basal Reader Programs: How Do They Stand Today? *Ralph C. Staiger*
Pro-Challenger: *William D. Sheldon* 295
Con-Challenger: *Lyman C. Hunt, Jr.* 300

308 Do the Advantages of Ungraded Schools Outweigh the Disadvantages? *Albert J. Kingston*
    Pro-Challenger: *Robert H. Anderson* 317
    Con-Challenger: *Josephine B. Wolfe* 322

328 What Are the Advantages and Disadvantages of Individualized Instruction? *Harry W. Sartain*
    Pro-Challenger: *Evelyn B. Slobodzian* 344
    Con-Challenger: *William K. Durr* 352

357 Dyslexia: Is There Such a Thing? *Morton Botel*
    Pro-Challenger: *Gilbert B. Schiffman* 372
    Con-Challenger: *Gladys Natchez* 384

392 What About Special Theories of Teaching Remedial Reading? *Albert J. Harris*
    Pro-Challenger: *Janet Lieberman* 408
    Con-Challenger: *James Jan-Tausch* 415

419 Are There Any Real Differences between Reading Instruction in the Elementary School and in High School? *A. Sterl Artley*
    Pro-Challenger: *Margaret J. Early* 431
    Con-Challenger: *Eldonna Evertts* 437

444 Should Colleges Change Their Curriculums in Preparing Teachers of Reading and Reading Specialists? *Mary Austin*
    Pro-Challenger: *Helen Huus* 452
    Con-Challenger: *Marion D. Jenkinson* 457

464 The Future of Current Issues in Reading *Nila Banton Smith*

Preface

AT THIS MOMENT education is at a premature collision with the future. The disturbing changes of a lifetime have been compressed within the past ten years. This premature collision of education with the future is causing sparks to fly, flames to shoot, innovations to evolve. As a result, issues are seething in all aspects of this professional field. Reading is no exception.

Of course, there have been reading issues in the past. Issues come and issues go; but reading, like the river, goes on forever, and learners continue to master the reading skill. Those who are being taught to read are such accommodating creatures that they adapt themselves to whatever method or material or philosophy the teacher wishes to use with them and carry on in the reading act entirely oblivious to reading issues. Teachers keep on teaching; students keep on learning; issues keep on raging. This triumverate is with one most of the time. At the present moment, however, issues in reading are more varied, more widespread, more gripping than at any preceding time in history.

Being keenly aware of the situation in regard to current issues in reading, H. Alan Robinson, 1967-1968 President of the International Reading Association, chose this topic for the Saturday forenoon program of the Thirteenth Annual Convention in Boston, April 27, 1968. His choice was warmly approved by other officers of the organization. The program was organized and implemented by Nila Banton Smith, serving as general program chairman. The manuscripts resulting from the seventeen different issues that were discussed are published in this volume.

The intent of the program was not to shape opinion one way or another. The intent was to inform the IRA membership, broadly and objectively, concerning various issues in reading and to present both "pro" and "con" aspects of each issue, leaving it to the listener, or in the case of this volume, to the reader, to do his own thinking and to arrive at his own conclusions.

In order to implement the above intention, the program for each issue involved papers presented by the following personnel: a speaker who objectively discussed the topic and presented research in regard to it, a pro-challenger who presented arguments and research in favor of the issue, and a con-challenger who presented limitations of the issue. The resulting papers appear in this volume under the respective titles of the issues considered.

The editor hopes the reader will find these papers stimulating and thought-provoking and that the information given will help the reader to do his own constructive thinking about current issues in reading.

N. B. S.

The International Reading Association attempts, through its publications, to provide a forum for a wide spectrum of opinion on reading. This policy permits divergent viewpoints without assuming the endorsement of the Association.

RESEARCH in reading has been conducted for nearly one hundred years. Always has the quality of this research been questioned by some who have believed that it should be greatly improved in design, control, and statistical techniques. Others believe that great improvements have taken place in reading research and that it is pretty good at the present time. The article below by Theodore Clymer and the "pro" and "con" viewpoints, presented respectively by Walter J. McHugh and James C. Crewe, provide interesting food for thought on this topic.

How Good Is Research in Reading?

THEODORE CLYMER
University of Minnesota

AN OBJECTIVE AND CRITICAL assessment of the quality of reading research is an interesting research project in itself. Before we begin discussion of "How Good is Research in Reading?" the reader may wish to know the sources of data for this presentation. The sources are many, and the reader may find this information useful in judging whether to accept what follows.

First, research literature served as an obvious guide, with the Gray and Robinson summaries being particularly helpful. Also, the writer had access to all of the ERIC/CRIER documents and publications through the help of Edward Summers of Indiana University. Second, discussion with the writer's colleagues at the University of Minnesota has been very helpful in identifying issues and problems. Third, consultations with personnel from other universities on a firsthand basis, as well as through discussion in the literature, have been revealing. This article contains no tables and no charts of frequencies. In essence then, what follows is a subjective analysis of the value of reading research.

Some background factors

In making an adequate interpretation of the value of current research in reading, it should be kept in mind the number of background factors which have had—and probably will continue to have—a major impact on reading research and on the educational scene.

Communication among researchers is immense—far greater than it has ever been in the past. We now have a larger number of journals reporting a larger number of research projects. Some of these journals, such as the *Reading Research Quarterly,* are sponsored by the reading profession while others, such as the *Journal of Educational Psychology,* are sponsored by related professions.

Communication on a firsthand basis has also been extended through many special conferences, panels, task forces, and symposia, called by a broad range of professional and governmental agencies, as well as by foundations. The Interdisciplinary Committee on Reading Problems, sponsored by the Center for Applied Linguistics under a grant from the Ford Foundation, is one example of this type of activity.

Professional conventions provide a greater exchange of information through firsthand contacts. As dwellers of the jet age we may not readily comprehend the impact of such personal contact. Recently one of the pioneers in reading research, an authority in his field, remarked that in his professional career he had never met another prominent researcher. This situation would be rare today. Now, through the leadership of IRA, personal contact has been extended to the international scene through the World Congress and other activities.

A second important background factor is the active involvement in reading research and discussion by a wide range of professions and disciplines. The importance of effective reading is more broadly recognized, as is the need for careful research in the area of reading problems. For example the American Academy of Neurology and the American Academy of Pediatrics recently, through a joint statement, called attention to the serious lack of supportive research for the Doman-Delacato procedures in treating disability. Obviously, a broad range of areas has a bearing on reading research. One of the problems is for the scholar from the discipline to know reading in the schools and for the person concerned with reading instruction to know the discipline. Recently the writer read that a researcher from a related discipline suggested that formal reading instruction end after second grade so that *all* teachers—not just reading teachers—would be concerned with language development. Obviously, this researcher did not realize that the primary grades are seldom departmentalized. While we may experience some problems in making an adequate application of the findings from related disciplines, none would deny the importance of such work on the future of reading research.

Third, we have had the entry of large-scale funded research, the first ever widely available in education. The United States Office of Education, the National Institute for Mental Health, the Armed Forces, foundations, university centers, regional laboratories, and a host of other agencies have been spending sizable amounts of money for research in education. The impact of this money is difficult to assess. It seems clear that a small amount of money spent on a carefully thought out and planned project may reveal a great deal more than a large amount of money spent for a poorly planned project. It will be a decade or so before an adequate picture of the value of current funded research is available.

A fourth background factor is the growing recognition of the complexities of doing reading research. We have not lost faith in the possibilities of research, but we recognize that the path to widely applicable findings is not as easy or quick as once hoped. The complexities in reading research are nowhere more evident than in methods research. When method A proves superior to B, how can we go about determining the salient factors in A which contributed to its superiority? Also, there is growing realization that many decisions in reading instruction may rest on an ordering of the importance of goals, rather than on a research basis. In other words, what is "best" may depend on the goals of instruction and the priority of these goals rather than on reading research.

While other background factors influencing research in reading could be discussed, the four which are listed here seem to be having a major impact at this time.

Problems currently emphasized and neglected in reading research

Throughout the history of reading research, it is possible to identify areas which have been emphasized or neglected. Generally these areas of emphasis and neglect can best be judged after a span of time. Making such evaluations of the contemporary scene is, therefore, somewhat risky, but the following points are the writer's assessment of the current scene.

1. Emphasis upon the aspect of decoding with a corresponding neglect of research in comprehension. Piaget and Guilford receive little attention, for example, in contrast to phonological research in word recognition. In the long run the psychology of thinking and the contribution of linguistics to our understanding of comprehension may be more important than what we are learning about decoding.
2. An emphasis upon beginning reading with little attention being given to the problems of the intermediate and high school levels. To look at some research reports and to listen to some of the speakers at this convention, one would be led to believe that the child's reading career is to be determined by the initial eight weeks of instruction in the first grade. While no one would deny the enormous importance of initial reading instruction, later levels are important, too; and much significant research is yet to be done at these later levels.
3. A neglect of the able and superior readers with great attention to the "disadvantaged" child. The realization that certain groups of children will need special and different kinds of instructional programs in reading is, to the writer, one of the most significant and exciting developments in reading research. The need to provide challenging instructional programs for disadvantaged children is recognized, but the neglect to provide comparable programs for able and superior readers is puzzling. There is evidently something in human nature which enables us to assist the less fortunate but which

makes it difficult to offer simliar assistance to the very capable.

4. Little attention to the impact of organizational patterns on quality of reading instruction. American educators have a great deal of faith in the importance of organizational patterns on school success. Throughout the land, elementary schools are reorganizing and are experimenting with new patterns of instructional responsibility and pupil-teacher contact. Unfortunately, little research appears in the literature which will verify that one or more of the new instructional patterns will produce superior achievement in reading. Until such research is available, it will probably not be possible to determine clearly whether the new instructional patterns are worth the time and effort to initiate them in the schools.

5. Few studies of reading in the content fields. A long-term controversy in the field of reading concerns the transferability of reading skills and the relationship of this problem to the teaching of reading in the content fields. Few studies are underway which delineate the specific reading problems met in the content field. Fewer studies, yet, of how children can be helped to meet the reading problems of the content field are reported in the literature. A great deal of work is needed in this area before we will be able to provide the most effective kind of instruction in content field of reading.

6. Neglect of the impact that reading has on the individual. In the final analysis, the most important aspect of reading is its effect on the individual. As yet we have little research, even exploratory research, in this very fundamental area. While definitive research in this area will not be available for some time, there is little evidence of the exploratory work which must precede the more detailed and definite research.

7. Within the profession a preoccupation with the evaluation of total reading programs with few attempts to isolate the salient factors within a program. This preoccupation pro-

duces research which provides helpful and definite answers to practical problems but fails to produce insights which can be broadly generalized.

8. Outside the profession a preoccupation with the evaluation of specific—sometimes seemingly unimportant—details. Here, some of the research seems so specific and detailed that the applicability of the results in any theoretical or practical way seem beyond the realm of possibilty. Perhaps the prime illustrations of the specific research to which reference is made can be drawn from research conducted by the learning psychologists and some of the child psychologists interested in perception. Possibly this research will some day find useful application, but in the meantime it probably will be necessary to engage in some research which will bridge the gap from the laboratory to the classroom.
9. Continuing attention to the pathology of reading growth with few research reports on conditions, characteristics, and development of normal readers. For the most part, research in reading has attempted to understand the reading process and the reading instructional program through an analysis of the disabled reader. Perhaps greater strides could be made in understanding the disabled reader if we understood more fully the development of the typical reader. More research is needed in this area.
10. A concern with *teacher effect,* but few discussions and almost no research on what *creates* teacher effect in the elementary classroom. What are the qualities of the teacher or the teaching that aid or hinder reading growth? Most researchers today have concluded that the teacher is an enormously potent factor in achieving reading success, yet few explorations exist of what it is that the teacher does which produces the achievement.

These ten comments on areas emphasized and neglected in reading research seem to cover most of the major trends in research at the present time. These ten comments also point out ways in which research might be improved and areas which merit added attention. It would be interesting to view the research ten years from this date to learn what new areas of emphasis and neglect have appeared in the research literature.

Some questions to ask about reading research

The final section of this article consists of a series of questions which can be asked about specific research reports and about research in general. Reflection on these questions may be helpful in determining the quality of research in reading.

1. *Have we asked the correct questions to lead to helpful answers about reading instruction and the reading process?*

An assessment of reading research forces the conclusion that oftentimes we have not asked the correct questions. Too often research has been concerned with solving a practical problem for a particular situation rather than determining a general principle which can be applied more broadly. Possibly, too, we have not given sufficient attention to the reading process and have been too concerned with outcomes or end products. Also, we must recognize that many of the principles adhered to in reading instruction have not been verified through careful experimentation. One of the activities which the writer sometimes carries out with graduate seminar students is the delineation of the principles upon which a piece of instructional material is constructed. Once the principles have been established, the group is asked to verify the principles in reading research. Oftentimes they fail to find the documentation they expect. This discovery of course, does not mean that the principle is not valid. It may be valid, but the research which might verify the principle has not been carried out. In such cases, students are encouraged to suspend judgment on the applicability of the principle until the research is completed.

2. *Have measuring instruments been good enough?*

Precision of experimental design is lost if measuring instruments are not equally precise. Occasionally the sophistication of the analysis blinds us to weaknesses in the measuring instruments. This situation is perhaps best illustrated by the work of Holmes and his students in the substrata factor theory. Do the measuring instruments used by Holmes and his students merit the detailed analysis and detailed discussion of results?

3. *How good is the design of the experimentation?*

While many technicalities could be discussed concerning the design of experiments, the most important one to consider is the fairness of the test which the experiment purports to carry out. Has the investigator arranged his design in such a way that no one outcome is unfairly favored over another. Most often this assessment requires careful thought and judgment rather than sophistication in statistics. For example, a study which purported to show the superiority of the initial teaching alphabet compared a group of first grade children using i.t.a. who had made the transition to traditional orthography with a random selection of children using traditional orthography. Such an assessment seems grossly unfair, for we are comparing outstanding children of the i.t.a. program with a group of average children using t.o.

4. *Are the conclusions consistent with the design of the study and the findings?*

Here again an interesting exercise for graduate seminar students is to take a research report and prepare a series of conclusions believed to be consistent with the design of the study and the findings. These conclusions may then be checked against the conclusions drawn by the experimenter. It is interesting how revealing such an exercise is and how text which is sometimes designated as a conclusion might better be placed under the heading "topics for further investigation."

5. *Have we made proper application of the findings of research?*

The value of reading research is, in the final analysis, determined by the use we make of the research in teaching reading or in understanding the reading process. We already have a great deal of valuable information on reading instruction which has yet to find broad application in classrooms. Someone has gone so far as to suggest that reading research be set aside for a period and instead of developing new information we attempt to apply well in the classroom that which is already known. While the writer would not go so far as to recommend such procedure, there certainly can be no question of the need to translate research into practice in the classroom.

6. *Have we attempted to answer too complex questions in research?*

Many times it seems we attempt to address ourselves to broad issues rather than specific items within these broad issues. For example, we address ourselves to the effectiveness of reading programs for the culturally deprived without full knowledge of the particular culturally deprived group concerned or without knowing, for example, the effectiveness of current readiness material with this group. Perhaps a better approach would be to answer each of the subquestions before going to the broad issues.

Summary statement

In looking at the background factors, the areas of emphasis and neglect in reading research and the questions proposed for looking at reading research, one may draw the conclusion that the writer views the research in reading as poor. Nothing could be further from the truth. While we have a long way to go in reading research, efforts to date have been substantial and have enabled us to construct reading programs which are efficient and effective. The current status of literacy is a clear testimonial to the quality of research which has been carried out to date.

Yet the quality of reading research must be improved, for greater demands are being placed on us and on our students. Never before has the reading program been asked to do more. Never have world and national conditions made it more difficult to carry out assignments. In short, reading research has taken us a long way toward the goal of effective reading instruction. We can be proud of what we have accomplished, but we still have far to go.

Pro-Challenger: WALTER J. MCHUGH
California State College at Hayward

HOW GOOD IS RESEARCH IN READING? What is meant by good? What, too, is meant by research? This is indeed a difficult subject which might serve as an excellent topic for debate. For almost every area of reading that has been studied, there are reports on the same topic with some showing positive results and others, negative. Then why bother with research at all? In this situation it appears that one might well capitalize on the conflicting findings and search further to refine and replicate studies. This work is being done more frequently now than at any period in the past forty years.

Through research, we have made progress in every area of human endeavor. In medicine, from the introduction of anesthetics in 1840, with its acceptance twenty years later we have now progressed to heart transplants and new refinements in medical research. From the blue-back spellers and the Bible as the sole teaching tools of the past century, we have advanced to a level of the most highly diversified systems and approaches to reading instruction known anywhere in the world. True, there is still a long way to go. No one can accept comfortably the realization that hundreds of children still have trouble learning to read. But in the past forty years, this number has diminished significantly.

Availability of research data

More research has been done in the field of reading than in any other area of the curriculum with approximately 7,000 studies now available. There also has been a marked increase in the number of journals, yearbooks, conference proceedings, monographs, and pamphlets available to the student of reading. Concurrently, the quality of the research being reported has been sensitive to criticisms of previous research endeavors. New studies have shown improved research designs, better trained researchers, and more detailed and more complete reporting of findings. The infusion of public funds and grants, both state and national, has helped to improve the quality as well as the quantity of research in reading. Cooperative studies, such as the National First Grade Study, have also contributed data that could never have been gathered and interpreted by a single investigator working alone. This study may mark the beginning of a trend toward more cooperative research projects conducted by two or more professors at different universities. Also, the design of the studies of the future may focus more closely on an aspect of the reading process or product, rather than on the end result as in the past.

The positive results of research

Comparisons on now-and-then studies of how well reading is being taught have clearly shown the significant progress made in the past forty years. Now, far more children are learning to read, and far more are learning to read well than at any other time in this nation's history. We have also, through research, found both the need and the means of implementing developmental as well as remedial programs through the secondary school curriculum. In addition we have learned through research that there is no one method of teaching reading. It seems highly possible that within the next five years, in one classroom, a teacher may be using any number of methods to teach reading—according to the learning pattern that best fits an individual child; i.e., a child may be taught through one method or a combination of methods.

It is through research that we have been able to improve the quality of reading instruction for beginning readers; particularly those children of urban slums, minority groups, and different cultures, who until recent years had limited success in reading. Research in these areas is only beginning but holds great promise for improved programs as it continues. Research has also been responsible for improved methods and materials for measuring achievement and reading difficulty through more precise, valid, and reliable tests as well as through improved observational and clinical procedures.

Perhaps the most positive results of research in reading have been the impact on publishers, editors, and authors of reading texts and other reading materials. These people, as a group, have been quick to incorporate into newer reading materials significant, well-done, well-conducted, and well-controlled research findings. They have judged reading research intelligently, incorporating new findings, procedures, and techniques into new materials of instruction.

For the most part, instructors in reading courses at both preservice and inservice levels in colleges and universities have incorporated bona fide research into their teaching as soon as such inclusion is valid and appropriate, but not before the research appears to be of a high level. This is but one of many avenues through which quality research findings are being made available and thus influence the teaching of reading.

Promising practices

During the past five years, federal, state, and local agencies have allocated considerably more support to upgrade reading instruction than during the preceding fifteen years. Much of these monies is allocated for research and dissemination of improved practices in the teaching of reading. In many states, after serious study, and in many instances, as a result of research, standards for certification of teachers, particularly reading teachers, have been upgraded. Scholarships, grants, and fellowships have been established to upgrade the training of reading researchers. These newer research grants are now available through several universities. Inservice training of teachers has been greatly expanded. Regional research laboratories have been established to conduct and disseminate research findings. Local and regional reading conferences for teachers have been held with increased frequency, attendance, and interest than ever before. A national clearinghouse has been funded to gather and disseminate research in reading.

Certainly if research efforts were not of considerable value and impact, the aforementioned organizations would not be working so hard through research to improve the quality of reading instruction. Although none would admit that research in reading is as good as it should be, it is not quite so poor as opponents suggest. Research in reading, particularly the quality of the research, continues to improve. There are fewer inconclusive reports and poorly constructed or designed studies appearing each year. The quality of research design, control of variables, conclusions, and demise of pedantic topics in favor of significant investigations will continue to grow. The same hope and promise held for reading research are also held for medical, science, and space research.

Hopefully, too, the reader of research reports will become more sophisticated in his ability to judge whether a study warrants the conclusions claimed. This enlightened reader will spend less time reading and judging research summaries, which list both good and poor research, and far more time reading original sources and judging each study on its merits—with a critical and trained attitude.

Con-Challenger: JAMES C. CREWE

University of Minnesota

THIS WRITER was assigned the task of expressing the "con" viewpoints in regard to the quality of current research in reading. This is a difficult task, not so much because the research done in reading is excellent but because when one speaks against anything, he may tend to be over critical and cancel any good that may have come from his criticisms.

To avoid this problem the writer has elected to evaluate the methodology of current research by using criteria other than his own. Kingston and Weaver (*9*) list four criteria for adequate research design. These criteria were applied to research articles published in the *Journal of Reading* from April 1967 through March 1968. They are 1) subjects are assigned randomly to all treatments; 2) there are comparison, i.e., control groups for all experimental treatments; 3) the assumptions of the statistical analysis used are "reasonably" related to the measurements used; and 4) generalizations are limited to the population from which the original sample was drawn.

Fifteen articles were found to be relevant for the evaluation (*1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13, 14, 16, 17, 18*). Of these articles only four were found to satisfy the four criteria. Seven studies failed to randomly assign subjects to treatment groups. Seven projects did not employ control groups. Nine of the studies used statistics for which the underlying assumptions could not be met.

It is disappointing to note such a high proportion of poorly constructed studies, especially since they must be "choice" having been screened by the editors of a leading reading periodical. We can assume, therefore, that by comparison the extremely poor research was rejected.

At times like this, one needs an encouraging finding to lift his spirits, and happily the articles which were evaluated do provide such a result. Of the fifteen articles, only two writers failed to mention limitations of their studies while all of the others satisfied this criterion.

It is obvious, however, that when two-thirds of the reading research published in a respectable journal during one year does not meet generally accepted criteria of methodological adequacy, research in reading is in need of great improvement.

Possibly, it is not fair to criticize researchers who are operating in a setting which places limits on their research designs. It might be that poor research is done only because supervisors, administrators, and school boards set up restrictions to such an extent that the use of control groups or the random assignment of subjects to treatment groups is not possible. If this is the case, the least one can expect is that a researcher will use adequate controls when he is permitted to do so. To explore this possibility, the writer selected six studies (*3, 5, 6, 8, 11, 16*) conducted in settings which accorded to the experimenter freedom in developing his experimental design. Of course, this condition would mean that all four criteria for evaluation could have been met. Even under these circumstances only two of the six studies qualified in all respects.

When one considers all fifteen articles, three major methodological errors appear evident: 1) several studies failed to employ control groups and, therefore, one cannot determine whether their results were due to Hawthorne effect or to treatment effects; 2) many studies employed pretest, post-test designs, but none of them took into consideration the effect of practice (Part of the gains made by the subjects in this type of study may be due to the fact that the student gained sophistication in his test-taking behavior); and 3) several studies failed to randomly assign their subjects to treatment groups; consequently, the assumptions underlying their statistical analyses were not met.

The findings of this evaluation are indeed not isolated. Robinson (*16*) concludes that at least 25 percent of the studies that he reviewed were not controlled for Hawthorne effect. McDonald (*13*) states possibly 60 to 80 percent of all outcome studies may be contaminated by Hawthorne effect.

It is apparent that research in reading is of poor quality. The question is *why*? Judging from the writer's evaluation, the blame can be placed on the shoulders of people involved at every level of research. First, researchers must learn to design their experiments correctly. Second, supervisors and administrators must allow researchers to randomly assign subjects to treatment groups and to use control groups. Third, editors of journals must be more selective in their publication of research articles. Only by the coordinated efforts of all these people will the quality of reading research improve.

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THE CONCEPT of teaching reading in the content fields came late in reading history. It was not until the forties that one first began to hear about this possibility. A meager scattering of investigations on the topic came through during that decade. Since that time several additional studies have been conducted; much discussion has taken place; and at the moment teaching reading in the content subjects has become a high spot in reading conference programs and in educational literature. The whole movement, however, is still in its infancy. Perhaps the following articles will advance one's thinking a step further.

Are We Really Improving Reading in the Content Fields?

LEONARD COURTNEY
St. Mary's College

IT IS DIFFICULT TO EVALUATE the extent and the effectiveness of reading in the content fields. There are few comparative studies which attempt to show the superiority of reading in a subject area in relation to reading in a special developmental program. There have been few studies which have attempted to appraise a total school effort. However, the sheer volume of studies dealing with reading in a variety of content areas or concerned with problems of reading in content areas is sufficient to warrant the opinion that something good is going on. Exactly how good this effort is or how extensive it is remains relative but probably it is a definite improvement over the situation a decade ago.

The literature on this topic falls generally into three categories:

1. Expository or descriptive articles which urge, recommend, or demonstrate the application of reading principles in the content area fields. These are numerous and unfortunately repetitious; but their continuing appearance in IRA journals, in other professional journals, and on the programs of professional conferences is evidence that the message is being presented.
2. Individual studies relating to various specific techniques, ap-

plications, or problems involved with reading in special content areas. Some of these are action research and others are more ambitious, well-controlled studies of individual problems or whole-school efforts. Most of these are done by people with an avowed interest in reading.

3. Investigation by content area people themselves relative to the reading ability of their students and readability of their own texts—additional proof that the subject matter teachers themselves are involved with this problem.

The evidence is extensive but inconclusive. If the objective is to make every content area teacher concerned with reading instruction as it relates to his subject matter and somewhat knowledgeable regarding techniques and methods, then it is almost impossible to assess the degree and the quality of growth. The literature does confirm a high degree of interest on both sides—from reading specialists advocating, recommending, and demonstrating how content area teachers may extend good reading practice and from subject matter teachers themselves investigating matters of personal interest. Nonetheless, the studies are scattered and uncoordinated, probably representative of a relatively small portion of the profession.

Nor can these studies be categorized to permit any general conclusion. They cover all levels from fourth grade to college; they examine efforts in almost all subject matter areas with English, social studies, and science predominating; they investigate behaviors as diverse as word analysis, vocabulary, purposeful reading, and the relationship between literal and critical reading, both general and specific; they are produced by reading specialists and by content-area people. Other studies appraise the quality of content area preparation for reading instruction, the general role of the content area teacher, and the kinds of reading practices involved with subject matter teaching. Others describe and attempt to appraise efforts to convert whole departments and schools to the need for improved reading instruction in the content areas. Specific findings, however, are limited and forbid generalization. They are frequently clouded by faulty methodology or analysis, recognized limitations, and conclusions which have minimal application. They, nevertheless, indicate a relatively high degree of interest, increasing sophistication, and focus on research efforts and undoubtedly effect wider influence—particularly among other content area teachers—than pragmatism or optimism might recognize.

The studies presented here, therefore, are selected more as representative of what is going on in research than as proof of quality; the conclusions cited demonstrate tendencies to this point and directions for the future.

The first set of studies reviewed demonstrates a variety of efforts being made to assess content area reading and indicates that the classroom teacher may be better equipped to deal with some reading problems than a special reading teacher might be.

General studies

One of the earliest studies of reading in the content areas was done by Eva Bond in 1938 (*4*). She investigated the relationship between general reading ability and achievement in specific fields for three hundred ninth grade pupils. Using principally a series of Cooperative Tests (English, Literary Acquaintance, Latin, General Mathematics, Algebra, General Science), the Iowa Silent Reading Test, and the Traxler Silent Reading Test for reading ability, she sought the answer to the questions "How well does a good general reader perform in English, Latin, math, and science?" and "Does he perform equally well in all other subjects or are some subjects more directly benefited than others?" She concluded that "There is no such thing as a critical level of reading ability above which added improvement in reading is no longer a factor in achievement at the ninth grade level." Her findings indicate that any increase in reading ability will be reflected in increased scholastic achievement." She states that her study supports the statement that "Every teacher should be a teacher of reading."

Fay (*9*) described several experiments in which classroom teachers attempted to apply reading to their specific content field. One of these will serve to represent what can be done by the interested teacher.

A fourth grade teacher used her entire class of 45 children in an attempt to see how much gain could be made in arithmetic reasoning in one semester as a result of special emphasis on reading skills and vocabulary. She employed the Stanford Achievement Test, Form J, to determine the ability of the students to handle paragraph comprehension and arithmetic reasoning. The results showed a range in reading ability from 1.7 to 8.6. The teacher stressed skill and comprehension with her pupils and gave specific training in the following skills: skimming to find the answer to a specific question, skimming to get a total impression, reading to grasp the main idea, reading to follow sequence of events, reading to note and recall details, following directions, critical reading, and remembering what one has read. A special drill was given in vocabulary along with computational skills.

Using another form of the Stanford Achievement Test, the teacher assessed the improvement the students made at the end of one semester of the experiment, that is, four months having lapsed between the two tests. Results indicated a substantial gain in both paragraph meaning and arithmetic reasoning. On the second test, 22 pupils, or 49 percent of the class, were performing at fifth grade level and above in paragraph reading. Twenty-four pupils, or 53 percent of the class, were performing at fifth grade level or better in paragraph reading. The class median gain in paragraph reading was six months. The median gain for the class in arithmetic reading was nine months, twice the time spent in the experiment.

A careful study by Krantz (*13*) reenforces the essential role of the content area teacher in the development of reading and study skills. In a comparative longitudinal study he examined the relationship of reading abilities and basic skills of the elementary school with success in the interpretation of context materials in the high school. Through school records and specific testing, he obtained massive data on 471 pupils: 215 as seventh graders in 1947 and again as eleventh graders in 1952; 256 as seventh graders in 1949 and again as ninth graders in 1952. He used a wide variety of instruments and analyzed his variables through zero-order correlation and multiple regression. Among his many conclusions, he noted that development of reading ability specific to a content area is highly important to pupil achievement in the elementary and secondary school; and in general, it is highly important to analyze the content fields and find related study skills, as yet unmeasured. By implication, he indicates that the content area teacher is best equipped to deal with these reading and study skills.

Melis (*16*) in 1964 surveyed 177 intermediate grade teachers to discover their use of "approved" reading approaches in the field of science and social studies. He listed sixteen areas, and 177 or 84.1 percent of the teachers responded. He noted the following: 1) application of "good reading practices" are more frequent at successively higher grade levels; 2) they are more common among social studies teachers than science teachers; 3) the years of experience of a teacher is not a significant factor in determining methods; 4) advanced training and preparation are not significantly related to difference in method; and 5) teachers appeared to follow the recommendations of experts in using available materials.

This obviously is the kind of information needed. Unfortunately this study leaves much to be desired; its total methodology and treatment of the material are inadequate to provide very much guidance. It does, however, give some hint of the need and possible application.

Another important area of concern in intensifying reading instruction in the content areas is the possible value of inservice work done by reading consultants. In 1963, Zepp (*26*) attempted 1) to identify basic reading and reading study skills to be emphasized in subject matter classes of grades seven and eight; 2) to help teachers formulate ways to assist pupils to develop these skills in grades seven and eight in English, history, geography, and science; 3) to show how a curriculum coordinator can do good inservice work with subject matter teachers; and 4) to see if these efforts bring any improvement in pupils' involvement in the program.

Zepp administered a silent reading test, work study skills tests, and social studies and science achievement tests to all seventh grade pupils in September 1958; he retested them at the end of the eighth grade. In the meantime, he held monthly planning sessions with the seven cooperating teachers in an attempt to make teachers more sophisticated in the reading areas applicable to their subject matter. The results are reported in terms of decile improvement with no statistical test. For example, from the beginning of the seventh to the end of the eighth grade, 53.9 percent of the students involved gained in silent reading skills; 12.9 percent regressed, and 33.2 per cent showed no gain. The other improvements were similarly reported. He does suggest, however, that the following reading and study skills are valuable: pronunciation, word meaning, and basic locational and reference skills. He concludes that junior high school teachers without specialized training in the teaching of reading can be guided through inservice programs to develop an understanding of basic reading skills in the regular subject matter classes.

It is regrettable that this study, so very promising, should have serious deficiencies. One notes the lack of a control group and of statistical verification, along with the failure to specify the nature of the gains or the effect on the content area served. Little is said with regard to teacher aptitude, cooperation, or attrition or of the time involved. Nevertheless, it is studies such as this, if properly conducted, which will reveal the real degree and nature of improvement of reading in the content fields.

Smith (*23*) reported a year-long cooperative "experiment" toward reading improvement by English, general science, and social studies departments of a New York high school. It was designed to evolve a method to improve the reading and the writing skills of ninth grade students. The procedures as outlined are excellent and such as should be employed in any departmental effort. Actually the report involves nothing more than affirmative observations as to the value of the work, the degree of cooperation which existed, and the personal satisfaction on the part of the teachers. Again it is regrettable that fuller information is not given with regard to the cooperation of the teachers, the varying degrees of cooperation from one department to another, and the strength of leadership involved in the total program. It is interesting that the general science teachers who participated in the program claimed that they sacrificed almost one half of the usual content time in order to conduct the reading exercises involved. This experiment is likewise illustrative of the possibilities, but it provides very little evidence for evaluation.

These several studies indicate some of the difficulties occurring in any attempt to involve all departments of a school in a totally integrated and cooperative reading effort. A study by Braam and Roehm (5) points up others' difficulties in enlisting the full cooperation of subject matter teachers in reading development. Working on the premise that knowledge of reading skills necessary for successful reading of subject matter materials is a prerequisite to teaching the students to effectively read such material, they sent a questionnaire to the nonreading teachers of sixteen high schools; seventy returns were received. The investigators noted that 1) considerable discrepancy existed between conception and knowledge of reading skills of subject area teachers and of experts in reading; 2) the thinking of reading experts is not being effectively transmitted to subject area classroom teachers; 3) teachers seem more aware of student incompetencies than of competencies; 4) mathematics and English teachers are generally most responsive to the question of reading skills; 5) formal or inservice training does not appear to increase the awareness of reading skills necessary for successful reading in the subject areas; and 6) the existence of a reading program and the presence of a reading specialist do not seem to have much effect on the subject matter teacher's awareness of the student needs. Braam and Roehm concluded that it is evident that communication between experts and classroom teachers is not being effected through existing channels of professional writing, instructional programs in the teaching of reading, or by reading specialists in the schools.

These studies, then, do represent the need and the possible gains which may result from increased effort in the content areas. They demonstrate that individual teachers with good will can effect improvement; that the content area teachers are best equipped to deal with some kinds of reading problems; that teachers of allied content areas may work cooperatively together;

but that there appears to be a great lack of sophistication in reading techniques among content area teachers and, in general, no concerted effort to integrate reading instruction with subject matter.

More specific applications

The following studies represent efforts at several levels in varying reading behavior and subject matter areas.

Several studies—even some recently completed but yet unpublished—indicate that word analysis on the study of word parts is the best technique or approach for vocabulary development in the content fields. Severson (*20*), for example, reports that an experimental group made 17 percent better gains in biology vocabulary than did the control group when vocabulary was attacked through study of prefixes, suffixes, roots, and meanings.

In 1961 Koester (*12*) investigated 50 sixth graders to discover differences in reading science material for two specific purposes. He developed two tests of purposeful reading, each consisting of a series of twenty different expository passages in science. Group A was instructed to read to understand step-by-step directions; Group B, to find the best explanation of the events. The passages were administered two each for ten successive school days. Both groups took the same comprehension test and recorded their self-perceived reading behaviors. Koester found no significant differences in rate or comprehension between the two groups. Students with high intelligence and high science achievement scored better. In all, although the real differences are not clear, there seemed to be no notable difference as a result of varying the purpose for reading. (Unfortunately no reliability data are supplied on the instrument used, and the statistical details in the abstract are inadequate.)

Likewise working with sixth graders, Shores (*21*) found that they were not clear in their own minds as to their purposes in reading or how to apply the purposes. In yet another study (*22*), he reported that pupils do vary their performance with different kinds of material read for defined purposes.

The relationship between awareness of structural relationships in English and ability in reading comprehension was tested by O'Donnell (*17*). Using a self-constructed test and the Cooperative Reading Test, Form Z and the Iowa Grammar Information Test, Form A with 101 senior high students, he found sufficient evidence to recommend the teaching of linguistic structure rather than traditional grammar as a major means of developing reading comprehension.

Forseth (*10*) found that tenth grade pupils who study geometry improve in reading ability more than do their classmates of equal initial reading ability and intelligence who study subjects other than geometry. He reported significant gains with geometry students whereas similar comparisons made for biology, home economics, and industrial arts yielded gains which were not significant. Forseth offers no rationale for this phenomenon.

Seeking the characteristics of the social studies reader, Covell (*8*) tested 101 seventh grade American history students. He selected the ten best and the ten poorest for intensive case study. The good social studies reader in general 1) has a broad knowledge of technical vocabulary; 2) understands time and place concepts; 3) shows strength in general and technical vocabulary and in sentence and paragraph comprehension; 4) has average or better intelligence; 5) comes from a middle- or upper-income home; 6) has liberal social views and is active in school; and 7) likes reading.

In contrast, the poor reader is at the opposite end of this continuum in all of these characteristics and is usually at least one year retarded in school. Unfortunately the investigator did not rank these characteristics or show their interrelationships. Nonetheless, the advice and evidence here afforded to social studies teachers could serve to strengthen their instructional approach.

Relationship between general and special reading abilities

One of the disturbing aspects of studies of reading in the content fields is the occurrence of conflicting or at least noncorroborating evidence. This situation is quite marked in the relationship of general reading ability to more specialized reading competencies. Perhaps agreement should not be expected since different instruments and methods are employed and few of the studies reflect similar controls or purposes.

Troxel (*24*), for example, in studying "The Effects of Purpose in the Reading of Expository Math Material in Grade 8" found that speed and accuracy of reading are influenced by the purpose of reading and that those who read expository math material faster and with greater accuracy also tend to achieve higher scores on general reading ability tests. There is nothing surprising about such a conclusion.

Cooper (*7*) found science-reading ability to be equally related to general vocabulary, English vocabulary, social studies vocabulary, and science vocabulary with correlation coefficients ranging from .66 to .85. He concluded that reading ability appears to be largely an expression of a student's total intellectual and language development and that differences are not specifically related to differences among their associated vocabularies. He states that "relatively minor degrees of independence existing among different reading abilities and among different samples of vocabulary are associated with subjective attitudes toward the various subject areas."

Artley (*2*) in testing 200 eleventh grade students reports a correlation coefficient of .79 between comprehension in social studies and in general comprehension and implies that improvement in reading in social studies could help general comprehension.

Maney (*14*) speaks to the value of the science teacher's concern with reading. She investigated the relationship between literal and critical reading comprehension of science materials and between reading comprehension as measured by a reading survey test and that appraised by a literal and critical reading test of science. Using 513 fifth graders and accepted measuremnt instruments she, among others, concluded that proficiency in critical reading of science materials cannot be predicted from scores obtained 1) on literal reading tests in science, 2) on group tests of verbal intelligence, or 3) on "general" reading tests and that proficiency in literal reading of science can only be partially predicted from the same. She recommends that, since critical reading ability consists of relatively separate abilities, the best procedure for developing critical reading proficiency is by providing instruction in each specific skill. This instruction needs to be systematic and direct.

Similar to Maney, Witt (*25*) examined both social studies reading in general and ten specific social studies concepts in particular, i.e., ideas of depth and breadth which can be applied to past, present, and future. Her subjects consisted of sixty-two seventh graders divided into equated groups, and she employed a variety of instruments with normal empirical controls and statistical care. She concluded that the concept approach to teaching social studies is desirable to develop critical thinking and reading skills are effective when applied to social studies, but increased skill in reading does not necessarily mean increased skill in conceptualization of social studies concepts.

Aldridge and Anderson (*1*) analyzed 300 National Merit Scholarship Tests in Kansas in 1958. From a pool of 7,000 available tests, they picked 300 at random—one from each of 312 high school lists. They used correlation and multiple regression analysis with "t" and "f" tests for significance. Their results revealed that ability in natural science reading was accompanied most intensely by abilities in word usage and social studies reading; math usage was the least important factor and English usage (punctuation, spelling, etc.) contributed nothing.

Readability

Most reading authorities urge that content area teachers take special interest in the readability of the texts they use with students. This one area of reading does seem to be a matter of common concern to all the subject matter investigators but not always with similar results.

A wide range of studies would seem to confirm that most textbooks and supplementary reference books are beyond the reading ability—in concept load, vocabulary, or both—of the students for whom they are intended. These studies generally have used the Dale-Chall or the Flesch Readability formulas, the latter more frequently and usually without the "human interest" formula. Two studies, however, exercise a caution in the application of readability formulas and in the matter of readability itself—at least in special areas.

Marshall (*15*), in a most careful study in 1962, set out to discover if a readability formula could predict comprehension of high school physics texts. Because he viewed the use of word lists as prohibitive in physics, he decided to test the Flesch formula. Every accepted empirical caution and control, pre- and post, were observed. He selected a passage on electricity from the most commonly used physics text in New York State and rewrote it to raise the readability. He developed a comprehension test on both passages. He used the Cooperative Reading and the Cooperative Physics tests to determine other variables and eliminated any subject with prior knowledge of the subject matter. Every possible care was exercised; the whole was piloted. Finally, 144 matched subjects completed the reading of the passages. He found *no* relationship between readability and comprehension. Students in the six participating high schools did as well on the test of comprehension after having read the passage with low readability as their classmates did after reading the passage with raised readability. The good readers and the good physics students scored significantly better than their opposites. He concluded that the Flesch formula is not justified with high school physics texts and by extension with other technical and scientific material. This work would seem to raise some questions relative to other readability studies of specialized materials.

A study by Blue (*3*) in 1964 extends understanding of this matter, apparently indicating that reading difficulty makes no difference in the understanding of scientific reading. Using 240 seventh graders selected at random, he administered eight science selections of approximately 900 words each with varied difficulty in vocabulary, sentence length, and style, along with a single comprehension test on the selections and a four-item rating scale. He, too, exercised standard empirical controls. He found no significant difference in science reading comprehension between students who read selections containing variations in reading difficulty of at least three years. He suggests that a test of general reading comprehension seems to be a better predictor of science achievement than a test designed to measure general scientific information. By implication, of course, his study points up the concept burden of all reading which cannot be assessed through existing readability measures.

These studies of themselves demonstrate considerable interest on the part of subject matter professionals regarding the reading ability of their students and the materials being used. The more recent studies cited, likewise, demonstrate a high degree of critical sophistication in approaching the task.

Large-scale programs

To bring this review to some kind of optimistic conclusion, let us briefly examine efforts and results manifest in a single area: the language arts.

In 1957, Wallace Ramsey (*18*) set out to answer the following: "Whom, in what classes, and by what methods should reading be taught in the high school?" He attempted to present evidence concerning the effectiveness of a reading program with the following characteristics: 1) instruction in regular English classes with no attempt at homogeneous grouping; 2) teaching done by regular English teachers who had received no training in the teaching of reading; 3) reading instruction presented as part of the instruction in literature; and 4) attempted improvement of four important types of reading skills, including introduction of the selection, interpreting the selection, extending skills and abilities, and extending interests of the students.

Setting up the program with five English teachers, Ramsey spent one-half day each week helping the teachers throughout the school year. He held a series of eight one-hour teachers' meetings with several consultants involved. The work itself was conducted with 425 senior high school boys and girls. The English teachers spent 120 minutes a week of class time in the thorough integration of reading, literature, grammar, and composition. At the end of the school year, the two reading tests were readministered, and the amount of growth each student had made in reading was determined. The scores of 138 eleventh grade students were subjected to statistical analysis, all gains being statistically significant and equally beneficial for students of high and low mental ability, boys as well as girls.

Ramsey reported that two control groups of 78 students each made gains of four percentile points as compared to average gains of thirteen percentile points by the experimental groups. Although the research as reported does raise questions, it is the cooperative effort and the empirical methodology—however limited—which are encouraging.

In separate studies, Ruth Reeves (*19*) and Robert Clark (*6*) report similar efforts. Reeves worked with three low eight grade classes, three English teachers, three social studies teachers, and three science teachers. Clark reorganized the English department into seven nongraded levels, assisting the teachers through inservice programs. Reeves reported most encouraging gains at the conclusion of the year as evidence through standardized tests. But she likewise reports that efforts to renew the program the following year with different teachers were unsuccessful. It had been the control of the experiment, the organization of the group working together, and the focus of interest on improvement in reading that had made for success. Clark, too, felt that their program had been successful, particularly because of the enthusiasm and cooperation of the content teachers who responded admirably to information and direction.

Concluding remarks

The three reports just cited frame quite well the possibilities and the difficulties involved with efforts to improve reading in the content fields. It is difficult to organize, sustain, and empirically evaluate any program which permits such a wide variety of almost uncontrollable variables. Yet the efforts continue—although one must admit that the endeavor is still in its infancy.

On the other hand, as Walter Hill (*11*) points out, there are subjective optimistic signs. There is a gradual shift in teacher attitude, marked by growing interest in the problem of reading skills and reading improvement among all junior and senior high school teachers. They are raising questions—questions which cause them to wonder whether anything except a full-scale, all-school program will ever improve reading instruction. More and more teachers are recognizing that reading a math problem, a newspaper feature, an industrial design, a dress pattern, or locating and critically evaluating special resource materials is not something apart from the responsibility of every teacher. They know that reading ability and intellectual acumen are complementary. They see firsthand evidence of the high positive correlation between reading ability and academic success. Discovering materials and methods to fit student needs, teachers are finding it more satisfactory to work with poorer students in the classroom than to assign these students to special reading programs or constantly reassign them elsewhere. Furthermore, teachers realize that failure greatly affects the morale of the individual student and reduces both his satisfaction in school and his chances for success in content subjects. For those who look, there are content area teachers who are, possibly unconsciously, effecting good reading techniques in their normal daily teaching. One can take it as axiomatic that any good teacher must be a good teacher of reading in his field.

Others, more knowledgeable than the writer, agree that research in the area is "scanty" (Traxler), "too varied to permit classification" (Townsend), "generally meager and insufficient" (Summers). There are few completely satisfactory programs which adequately emphasize the teaching of reading in subject areas. More and better research is needed: research in teacher training, research in the correlation of subject matter objectives and content improvement with reading objectives, the provision of adequate materials, grouping for instruction, measurement and evaluation of outcomes, and establishment of guidelines for the administration and supervision of programs once in operation.

"Are we, then, really improving reading in the content areas?" Fortunately the writer is not constrained to give any categorical answer to this question. Perhaps the writer of the articles that follow can justify a confident "yea" or "nay." The writer of this article, however, admits to a tentative "maybe."

There is ample evidence of interest, but certainly what is presented here can hardly clarify, and possibly may only confuse, the issue.

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Pro-Challenger: Douglas M. Collins
Coast Visual Education Company

THE INTENTION of this paper is to debate the affirmative position of the question "Are we really improving reading in the content fields?" The question must be viewed two ways:

1. *Literally.* The question does *not* ask whether the subject matter teacher should teach reading or whether enough is currently being done in the content field or whether more should be done. The question simply asks whether instruction is improving.
2. *Relatively,* that is, in reference to some point in time. The remarks that follow will be based on the state of the issue in 1968 as compared to prior years.

One of the problems that has existed, in terms of extending the teaching of reading beyond the confines of the reading laboratory and beyond the domain of the reading specialist, has been the tendency of the reading specialist to preach to his colleagues about their obligation to teach reading in their respective content areas without ever showing them how. Another dimension of this problem has been the failure of the reading specialist to actively *involve* the subject matter teacher in the development of teaching strategies. Most efforts reflect a passive involvement of the subject matter teacher and perpetuate the mystery of teaching reading. Personal experience also indicates that one does not meet with hostility and indifference *if* one shows the subject matter specialist that he can teach reading *without jeopardizing the integrity of his subject matter*. Once the subject matter teacher recognizes that he has been teaching much reading unconsciously and that a conscious effort on his part will not only improve student ability to read the words but also will improve student comprehension of the content, he becomes a loyal supporter of a school-wide reading program. The effective reading specialist is one who offers his talents to show his colleagues how to teach purpose and pattern as these cover their respective content areas. All assignments ought to begin with the unlocking of the pattern of the discipline. Each subject matter area has definite and consistent patterns of writing. Every subject matter teacher should be made aware of Smith's articles (*4*) entitled "Patterns of Writing In Different Subject Areas." The next step should be the identification of the purpose for doing the assignment. This recognition of purpose will dictate the reading rate and the method of attack. It might also clarify the reason for the teacher's making the assignment.

The writer recognizes that the teaching of reading in the content fields should be done both by the reading specialist and the content teacher and assumes that at least one of them is making some effort to improve its instruction—hopefully, both. It seems pertinent at this time to identify the respective responsibilities of the two teaching sources. It is the job of the reading teacher to continue teaching the basic skills and, to some extent, the broader aspects of the application of these skills for continued growth in the content areas. The content area teacher is concerned primarily with special skills and their application, both of which are necessary for mastering the particular subject.

Another consideration is the nature of the reading act itself. It is obvious that the verb *read* is a transitive verb beyond the foundation skills level of reading instruction. After the basic skills are learned, the student reads something. That something, in the schools of America, is subject matter. It is at this point that the student does something with his reading. Whatever reading skills he has been taught intentionally, or learned incidentally, are put to use at this level. In addition, the knowledge explosion has resulted in greater quantities of material to cope with and greater demands for selection of content. Out of necessity the subject matter teacher and his students have had to refine their reading attack skills.

Finally, the writer takes the affirmative stand in spite of the fact that there is little meaningful research to support improvement of reading in the content fields. The fact that research is lacking does not necessarily mean that improvement is not occurring. Likewise, it certainly does not imply that it is. The point is that there are many exciting and innovative programs emerging in the schools without publicity and fanfare. Some administrators and teachers are still more interested in doing something for their students irrespective of research design, control groups, matched pairs, Hawthorne effect, et al. Personal experiences of the writer, as a consultant who travels extensively in California and Nevada, reveal greater emphasis on reading as the core of the curriculum, greater concern on the part of administrators and teachers for the role of reading in academic success, and greater involvement of all teachers in reading-orientation workshops.

With these factors in mind consider the evidence that suggests that reading in the content field has steadily and increasingly been improved:

1. The recognition that reading is a lifelong process with the resultant extension of reading beyond the sixth grade.
2. The realization that an effective reading program cannot operate in isolation but must be considered in relation to the total school curriculum. Acute tracking of the results realized from a reading program indicates that the evaluative procedures limited to pre- post-testing are extremely myopic. The real measure of effectiveness of any reading program is what happens on the perimeter.
3. The involvement of the classroom teacher as a decision-maker, determining the materials to be used to contribute to the program under his direction, greatly enhances the awareness of the readability of materials as well as the levels of reading prevalent among students.
4. The emergence of the reading specialist, reading coordinator, or reading consultant at the state, county, district, and school levels whose primary functions are to meet with teacher groups, hold conferences with individuals, and make classroom visitations has an impact in terms of the extension of reading beyond the laboratory concept.
5. The creation of resource centers in which wide varieties of materials are made available to the entire teaching staff and student body has broadened the horizons in all subject matter areas.
6. The increase in the number of colleges and universities granting degrees with a major emphasis in reading with course requirements, including reading in the content fields,

has made a contribution to the teaching of reading in the subject matter areas.

7. The advent of NDEA Title XI Reading Institutes provided for elementary and secondary school teachers and consultants with inclusion of discussions concerning reading in the content areas.
8. The works of Herber (*1*) and Berg in their itemizing of the skills necessary to cope with the respective subject matter areas.
9. The appearance of school-wide reading programs, such as Highland Park High School, Highland Park, New Jersey (*2*); Operation School Wide Reading of University High School, Chicago, Illinois (*5*); El Monte High School District, El Monte, California; and Wm. S. Hart High School, Newhall, California (*3*).
10. International Reading Association's publication of recommended minimum standards, which include reading in the content fields, for the professional preparation of reading specialists and classroom teachers.
11. The fact that nearly every reading textbook included in most bibliographies for recommended reading by professional reading teachers and specialists contains references devoted to reading in the content area.
12. The publishing of new materials such as Nila Banton Smith's Be A Better Reader series, Science Research Associates Pictures, Graphs and Charts Laboratory, and Educational Developmental Laboratories' Study Skills Library.

The examples have been cited in an effort to be illustrative rather than exhaustive in terms of the factors that have influenced the extension of the teaching of reading beyond the realm of the reading specialist.

All of this points to a definite improvement in the quantity and the quality of reading instruction in the content fields. Without question, there is need to extend it. Without question, there is need to further research it. But, without question, these were not within the topic for discussion here. In 1968 one can confidently say that there has been steady and continuing improvement in the teaching of reading in the content fields.

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Con-Challenger: CARLTON M. SINGLETON

Education, Inc.

THE WRITER'S ANSWER to the question "Are we improving reading in the content fields?" is an emphatic "No."

Improving reading in the content fields is a fragile will-o'-the wisp that makes for an attractive quarry and a fruitless chase. Improving reading ability is a worthwhile quest and one that far better deserves attention.

There are two reasons for so sharp a rebuttal. First, the possibility of developing reading skill in one content area and not in another is doubtful and, second, the writer sees no evidence of improvement in the teaching of higher reading skills, generally.

Of course, both of these blanket negatives need qualification. In a preceding article, Courtney delineated the pitifully few studies that have been done in the area. The meager evidence of improvement is so fragmentary as to be quite worthless. Time will not be taken to rebut each study except to remark that the Hawthorne effect is real and that investigators tend to find what they are looking for.

The simple truth is that, outside of a few obvious differences, reading is reading whether one is reading literature or science, social studies, or chemistry. The reader who reads well adapts his reading to whatever he reads. This is the mark of a skilled reader.

Of course, the reader needs to know the vocabulary of the field he chooses to read. I consider myself a skilled reader but I can't read my wife's knitting directions. The first lines usually read, "Cast on 88 stitches. Knit two, purl two, for a total of 90 rows." Now, I know every word in those directions but I can't follow them. My concepts of *cast, knit,* and *purl* are not sufficiently well developed. My inclination is to cast directions, yarn, and needles across the room.

The vocabulary of a content area is a legitimate field of instruction. It is one of the major responsibilities of teaching. It is not the usual vocabulary development in a course of instruction designed to increase vocabulary. A dictionary definition of *purl* is not sufficient for me to know how to purl. I must be *shown* how and I must practice it until I become a purler. This would be a normally expected outcome of a course in knitting.

Likewise, a complete understanding of words like *map, meridian, plateau, capitol,* and *range* is a normally expected outcome of instruction in geography. Although full concepts of such words are necessary to skillful reading in the content field, the writer does not consider such instruction reading instruction. It is, instead, requisite content field instruction.

There are other examples. Reading graphs and tables is an important arithmetic skill. It must be taught as arithmetic, not as reading. Chemical equations, statistical formulas, scientific language of all sorts—these require special understanding, but the understanding is a part of the content field.

Reading is reading. The skilled reader reads well whether he is reading literature, science, social studies, or home economics. The reader who reads well gets at the heart of the material, comprehends it, organizes it, criticizes it, and elaborates upon it. He instinctively puts himself in the attitude-set of the author and reads slowly or rapidly, emotes or catalogs, according to the material he is reading.

The point is, reading is reading, but for what? The *for what* is the key. The skilled reader knows his purpose in reading. Whether we call this purposeful reading, or variable-speed reading, or adapting one's reading to the purpose for which one is reading makes little difference. It is not how we call it but what we do. Reading instruction should include plenty of practice in different reading attacks according to the purpose for which one is reading.

Varying reading attack to suit the material to be read is the name of the game. A reader who varies habitually is well fitted to read in any of the content areas. The only additional skill he needs is knowledge of the content area itself.

The point is that reading is generalized ability which contains specific skills. It is a meaning-getting act and is subject to cognition training of every conceivable form. Meaning-getting implies thinking. It involves decision making: *Why* am I reading this? *How* will I read this? *What* am I reading? It involves evaluation. It involves inference. It involves interpretation. It involves selection and classification. Ability in each of these skills is subject to development and, therefore, subject to teaching. These are the skills necessary to read well in any content area, but they are generalizable across all content areas. They should be taught as part of the meaning-getting act.

Separating these abilities into a social studies reading kit of skills, a science reading kit, or a mathematics reading kit is ridiculous, in the writer's opinion. Which of the abilities just listed would you leave out of the science reading kit? The social studies reading kit? And why should the science teacher or the social studies teacher be a better teacher of reading, anyway?

The subject of this discussion is "Are we improving reading in the content fields?" The writer's first answer is "no," and his first argument has been that we should not be separating the teaching of reading into content fields anyway.

The second reason for an emphatic "No" is that there is little evidence that one is improving the teaching of the kind of reading necessary for skillful reading. In the face of disappointing test results, unsatisfactory reading achievement in general (Selective Service scores, dropout statistics, big city disappointments), the major attention of the reading profession has been directed for the past decade or longer to the improvement of basic reading ability—decoding. We have concentrated attention on getting everybody up to an independent level in reading—generally defined as about a 4.0 level. There is some evidence that we are improving a little in this respect. A higher percentage of the raw material—children starting school—achieves an independent level of reading today than was the case twenty-five years ago. But, this is not a very heartening statistic. The "reading for what" is missing. We seem to be achieving a situation in which a higher percentage of children can read but not very well. A higher percentage of children can read but do not choose to.

The evidence of improvement desired but not found is that we are developing skillful readers: readers who "read for what" skillfully and intelligently; readers who know when to skim and when to ponder, when to accept and when to rebut, how to infer and how to digest; readers who can fly a magic carpet; readers who can skim a project report and come up with the one startling bit of news; the student who can form his own conclusions from a research study and not have to accept the investigator's conclusions blindly.

The writer cannot find evidence to the effect that we are really improving the teaching of reading at these higher levels. At least, he cannot find evidence that the graduates of schools are so skilled in any appreciable quantity.

Even a visit to schools reveals no such evidence. To all intents and purposes, the teaching of reading stops in the primary grades for the student who has made normal progress in reading up to that point. From fourth grade on, the teachers are terribly overburdened in trying to get the low ones up to grade level. Who can blame the teacher for being thankful that some of his class is independent in reading—so thankful that he is quite willing to let well enough alone.

In secondary school the picture is exactly the same. Whatever reading instruction is provided is more than oversubscribed by those who need it—especially the retarded or remedial readers.

Nor have the publishers helped much. The typical instructional reading series seems geared to vocabulary development and nit-picking of the fact-recall category. Direct instruction in such factors of skillful reading as varying rate, skimming, critical evaluation, elaborative thinking, and categorizing is rare or nonexistent.

Basic techniques of teaching higher-level reading skills leave much to be desired. We penalize free reading with the book report syndrome. We so butcher literature in the dissection conducted in the name of analysis that we teach our students to hate the parts while never having savored the whole. We so insist that students learn the number of tons produced that they never learn how steel is made.

Reading is a meaning-getting act. The first step is to master the code of written language. We are improving our performance in teaching this code mastery. The next step is to devlop ability in the complex of specifics that make for skill in reading. The writer charges that we are not doing very well in this very important field. Since these specifics are the skills necessary to read successfully in the content fields, it appears that there is no justification for believing that we are improving reading in this area.

WHEN MOST present-day adults were in school, they heard nothing about speed reading. At the moment, however, the phrase "speed reading" seems to be on the lips of almost everyone—the cab driver, the storekeeper, the business executive, the professional man, the student, the housewife. Is all of this interest justified? Are some people overemphasizing this particular aspect of reading to the expense of other components and purposes of the total reading process? The thinking of three people in regard to this matter will be presented in the papers that follow.

Speed Reading: Is the Present Emphasis Desirable?

ALLEN BERGER
University of Alberta

SPEED READING, or increasing reading rate, is a rather sensitive topic. The intent of this paper is to draw together, as objectively as possible, information relevant to the topic as a whole.

In preparation, a questionnaire* was composed for the purpose of learning what was going on around the United States and Canada. The questionnaire was sent to 1,087 addresses which included the top 500 corporations (as listed in *Fortune* magazine), 225 commercial firms (as listed in the yellow pages of telephone books), and 362 reading centers (as listed in *A Directory of College and University Reading Clinics/Centers in the United States 1966/67*) (36). Replies came from fifty-three percent of the reading centers, twenty-one percent of the commercial firms, and eleven percent of the corporations. Data from the questionnaire survey will be presented in this paper and, with more specificity, in a later paper which appears in another part of the 1968 IRA Proceedings.

The topic "Speed Reading: Is the Present Emphasis Desirable?" contains the assumption that there is a present emphasis. Attention will be given to this assumption, then to seven controversial issues involving speed reading, and finally to whether the alleged present emphasis is desirable.

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*Appreciation is extended to Kathleen Nelson for coordinating the distribution of the questionnaires and for collating the data from those returned. Financial support for the questionnaire survey was provided by The Reading Center, Southern Illinois University, Carbondale.

Concerning the present emphasis

One way to assess the present interest in speed reading (reading rate) is to examine the degree of financial activity which is involved in connection with it. The most widely known commercial firm is Evelyn Wood Reading Dynamics, which was discussed in the September 27, 1967, issue of *The Wall Street Journal* (93). The feature article notes that "about 25 percent of the Evelyn Wood schools are owned by Diversified Education and Research Corporation, a closely held company organized by a Washington, D. C., business consultant. Diversified Education franchises the other Wood schools to independent operators who pay the parent company ten percent of their returns. Diversified Education and Research bought Evelyn Wood Institutes in 1962. . ." Today Mrs. Wood is ". . . on the payroll as a consultant, but owns no part of the company. She says she spends most of her time traveling, promoting the schools." The article noted that "the Wood schools account for nearly all the business of Diversified Education and Research, which is scheduled to be acquired by Famous Artists Schools, Inc., in New York, for Famous Artists stock that currently is valued at about $4 million. Shareholders of both companies have approved the agreement. Completion of the acquisition is awaiting a favorable tax ruling, according to a Famous Artists spokesman." Since the article appeared, the transfer has been completed.

Another sign of activity concerns the increasing interest generated by the claims and activities of the Wood Institutes of which there are now some 200 in about 70 cities throughout the United States. Last year, according to *The Wall Street Journal* article, some 45,000 people took the course, which now costs $175 a person. *Investor's Reader* (42) also contains information about the financial activity of the Wood Reading Dynamics Institute.

Some of the activity involving speed reading, or reading rate, is centered around certain locales in the United States. One of the liveliest is the Chicago area where people interested in increasing their reading rate have a choice of some twenty different programs. Assistance on the early stages of the writer's questionnaire study came from the speed reading committee of the Suburban Reading League, an IRA council composed of teachers in the Chicago area.

In March 1968, nearly a full-page advertisement on the Read-Ability System appeared in *The Wall Street Journal* (89). The advertisement was from Franchises International, Inc., "the nation's leading franchise organization . . . and destined to rapidly dominate the proven and profitable reading skills market." The ad was directed to "executives who can qualify as area directors." The Area Director, the advertisement explained, "has the exclusive rights to The Read-Ability System in his major market. His area is generously portioned to permit a network of many Speed Reading Centers . . . the Area Director need not teach classes, although he receives the same intensive training from national headquarters as his instructors do. He is the organizer . . . administrator . . . executive head of his Read-Ability Centers. In these management areas of his business, he receives first-hand help and continuing guidance every step of his way to important business success." In smaller type, the advertisement notes ". . . and experience as an educator is not needed to control your area network of speed reading centers." Continuing, it explains that if you have "the respectable cash position required, can combine personal drive with true leadership ability, prefer to invest in a franchise where high profits are supplemented by the pride of creative accomplishment in the self-help services you offer, and you want further information on the read-ability area directorship in your major market," he should phone the New York or Atlanta office. The April 8, 1968, issue of *The National Observer* (58) indicates that the fee required to purchase a franchise is $25,000, and the executive consultant and program director of the Read-Ability System is Joyce Brothers, described in the advertisement as "author, columnist, radio broadcaster, television personality, educator."

It would appear that much of the activity concerning speed reading that appeared in periodicals during the early sixties is now appearing in the form of training institutes. From time to time, however, an article appears in the popular media concerning reading rate, such as the one in *Popular Science* (*31*) entitled "So You Want to Read Faster?" which described the reactions of a *Popular Science* editor who had taken the Wood Reading Dynamics Program. His general reaction was that the course helped him to learn to skim more effectively but that he cannot "read" at 2,000 words a minute. Reflecting the professional interest, the current issue of *The Reading Teacher* (*92*) contains a review of 24 studies relating to reading rate spanning nearly a century.

Concerning seven controversial issues

The present emphasis on speed reading has drawn attention to a number of controversial issues. The following is a discussion of seven of these issues: 1) terminology, 2) measurement, 3) claims and advertisements, 4) perception, 5) subvocalization, 6) machines versus non machines, and 7) level of research.

Terminology

A major controversial issue involves the terminology used to describe this facet of reading. Tinker (*87*) says that the "only justifiable or valid definition of 'speed of reading' is 'speed of comprehension,'" and his test is based on his definition. Spache (*72*) defines reading as "the act of reading most of the words on the page," and uses that as the basis for his frame of reference. Taylor (*81*) suggests the use of WDPM—words dealt with per minute. Pauk (*64*) has observed that "the people who deal in selling these thousands-of-words-per-minute rate would do the field of reading a favor if they would coin another word, because what they are doing is not reading in the traditional sense."

The questionnaire designed by the writer contained a statement to complete: "A definition of speed reading that most clearly fits the objectives of our program is ________________." A multiplicity of responses were received as indicated in the following table.

Definition of Speed Reading

Objective	*No. of Responses*
Increasing efficiency of reading	131
Increasing rate of comprehension	91
Increasing flexibility of reading	81
Increasing rate of reading	35
Speed of comprehension	11
Increasing speed, comprehension, and study skills	11
Increasing speed without comprehension loss	1
Increasing reading rate and comprehension	1
Increasing flexibility and efficiency of reading through use in writing	1
All of the above	14
Recallability	1
Better study habits	1
Increasing vocabulary	11
Increasing word analysis and comprehension	1
Awareness of English language	1

Measurement

Another controversial issue involves measurement. "The measurement of rate of work in reading for various purposes poses many difficult problems," Davis (*26*) points out. "Number of words read per minute is, in itself, a meaningless score. To be meaningful, it must be associated with a score indicating the extent of comprehension that has been attained." Braam (*17*) proposed as a tentative measure the multiplication of rate and comprehension to obtain an effective rate; Spache, however, has questioned the logic in multiplying these two factors. Davis (*26*) also pointed out that many people will read 40 to 80 percent faster simply by being told to read faster, and this point was substantiated by Maxwell (*55*), who instructed students to read faster on a test. She concluded ". . . that reported gains in reading rate as a result of a course may be mere artifacts, since the student's initial speed potential (i.e., how fast he could read by forcing himself) is not known. Perhaps the only thing that he learns in a reading program is that it's all right to read fast on tests. At any rate, our evaluations would be more meaningful if we were concerned with assessing initial skills more adequately."

The questionnaire indicated that 187 respondents measured rate by number of words per minute, while 19 used number of words dealt with per minute. The effective rate, which is referred to as the reading index by Educational Development Laboratories (EDL) and others, is used by 20. Other ways indicated by a single respondent included "number of pages read in a given time," "percentile on the Iowa Test," "percentile on the Cooperative Test," "time to read a given chapter," "time to read an entire book," "reduction of time spent on reading," "maintenance of comprehension at an 80 percent level or speed is not stressed," and the use of "gross and effective rates." Two said that they did not measure rate.

In response to the statement, "Briefly comment on how comprehension is taken into consideration," more than 25 ways were mentioned. These included quizzes, 39; outlines and summaries, 15; ideas per minute, 2. Other ways included the use of standardized tests, group discussions, teacher-made tests, film quizzes, and testing in relation to purpose and material.

Recently the writer examined 25 tests which claim to test rate, comprehension, and/or flexibility for the purpose of finding a test composed of short passages and a test composed of a long passage to allow the reader to perform on these different kinds of measures. Most of the tests had little or no validity or reliability data. Tests found to be most reliable included the Van Wagenen Rate of Comprehension Test (*88*), the Robinson-Hall Reading Test of History (Forms Canada and Russia) (*67*), the Braam-Sheldon Flexibility of Reading Test (*18*), and the Nelson-Denny Reading Test (*60*). A fifth test (*94*), which shows promise, is in the research stages of development at Case Western Reserve University under the direction of Esther J. McConihe and Byron Svetlik.

Tests indicated as most popular among the respondents to the questionnaire were The Nelson-Denny Reading Test, the Cooperative English Tests, California Reading Tests, the Triggs Diagnostic Reading Tests, EDL Reading Versatility Tests, and various forms of the Iowa Silent Reading Test. Of those responding to the item regarding the use of a pretest, 161 replied in the affirmative while 14 replied that a pretest was not given.

"Pre" and "post" measurement in the Wood Reading Institutes involve the use of tests based upon two paperbacks—*Albert Einstein* by Arthur Beckhard (*5*) and *Satellites, Rockets and Outer Space* by Willy Ley (*49*). Also used is The Nelson-Denny Reading Test. In reference to the money back guarantee, three times an increase in reading rate with no significant loss in comprehension, the reading index is obtained from the tests based upon the paperbacks (*21*). To illustrate, if the beginning reading rate is 300 words a minute and comprehension is 80 percent, the reading index is 240. One of the charges against use of the reading index is that if the final reading rate is 2,000 words a minute and comprehension is 50 percent, the reading index is 1,000, or four times the beginning reading index, which is actually a spurious increase. Representatives of the Wood Reading Program claim that they refund two percent of the fees obtained (*21, 93*).

Obtaining a measure of reading flexibility is another problem resulting, in part, from a certain degree of controversy over the meaning and nature of flexibility. Carrillo and Sheldon (*20*) have suggested that the ability to read rapidly is a prerequisite to reading flexibly; McDonald (*54*), however, reflects in part the findings of Laycock (*47*) who observed that sixth graders may be observed as flexible or inflexible, and he suggests that the ability of a reader to deliberately vary his rate is "a widely prevalent misconception." Spache (*74*) and Harris (*35*), however, suggest otherwise. Several tests of reading flexibility have been developed, including those of McDonald and Letson (*48*) and Braam and Sheldon (*18*). New developments in testing flexibility are discussed by Ironside (*43*), who compares various tests with criteria suggested by Carrillo and Sheldon (*20*). Regarding testing for flexibility, Berg (*6*) concludes that "flexibility in reading is the product of an attitude and environment that offers the reader a maximum of psychological freedom and safety. Mechanical attempts to produce flexibility within an environment which is coercive and rigid may indicate some immediate results from testing, but testing after a lapse of time will . . . show little or no permanent gain."

Still another problem involving measurement concerns retention of gains. Ray (*66*) reviewed fifteen studies dealing with retention of gain. Seven indicated a retention of gains in reading rate; five reported a decline, and three reported additional gains beyond the rate attained on the post-test. An additional problem is the interpretation of test results. For example, on a test used by the author during his doctoral investigation there was a significant increase for one group at the .01 level of confidence. However, the actual mean gain was only 25 words a minute. Hence the question: Is it ethical to take six weeks of student and instructor time to achieve an increase of only 25 words a minute, even though this increase is statistically significant? (*44*).

The issue of measurement of reading rate and comprehension is far from resolved, and various other ways have been proposed. Rankin (*65*) recommends the residual gain method of measuring rate; others recommend counting syllables rather than words per minute. In his doctoral study, Hardison (*34*) contends that the results of a college reading improvement program designed to improve rate and comprehension depend, in part, on the measuring instrument used.

Claims and advertisements

A third controversial issue involves claims and advertisements. Among the most widely known claims related to increasing reading rate are those made by Evelyn Wood Reading Dynamics, Inc. Their advertisements (*59*) claim, among other things, to "at least triple your present reading efficiency or your tuition will be refunded." The course consists of eight 2½-hour sessions, one session each week, and the "average student reads 4.7 times faster than his starting speed with equal or better comprehension." Their ads further state that "conventional rapid reading courses aspire to 450-600 words per minute. Most Reading Dynamics graduates can read between 1,500 and 3,000 words per minute, and many go even higher."

People who wish to read faster than 3,000 words a minute can enroll in the Optimation Rapid Reading Course, which has since been taken over by the Rapid Reading Foundation (*3*) of Chicago. "Most Optimation students, from children to senior citizens, learn to read at the rate of 5,000 words per minute," an advertisement (*23*) claims. "Many are able to read 10,000 words per minute—or more. One 20-year old university student from Chicago learned to read at the incredible pace of 40,000 words per minute with increased comprehension!"

Yet even these rates are slow in comparison with those claimed through a program described in the September and December 1964 issues of *Florida Education* (*52, 53*), the January 1967 issue of *North Carolina Education* (*51*), and more recently in the Quincy, Illinois, *Herald-Whig* (*7*). Through this program a five-year old girl was taught to read 6,000 words a minute; a junior high school girl, 50,000 words a minute; and an 11-year-old boy reached 123,000 words a minute. The essence of Panoramic Reading, a speed and remedial reading program of Vearl G. McBride, is presented in the January 14, 1968, issue of the Quincy, Illinois, *Herald-Whig*. McBride says that his students are not skimming but are ". . . seeing all of the words and understanding them." He emphasizes the need to consider individual differences in teaching speed reading and recommends an eleven-step approach which includes holding the book at different angles "to determine which angle is best for you," practicing seeing words fast, "with no comprehension or as little as you can manage, for four to six hours," and then "gradually begin on comprehension as well as speed, trying to answer one or two questions with each reading . . ." and "gradually increase your comprehension and maintain the best speed you can."

More conservative yet hardly less controversial claims are made by firms that deal more closely with the schools. The publisher (*25*) of the Controlled Reader, one of the more popular group-pacing methods, claims that rate, comprehension, and flexibility (referred to by the publisher as variability) will be increased; however, no astronomical figures are presented. Similarly, the publisher (*79*) of a popular tachistoscopic method, the Tachist-O-Film Program, claims that rate and comprehension will be increased.

Consideration must be given to claims of individual methods as well as group methods. The Rapid Reading Kit (*38*), an individual tachistoscopic method, will "double your reading speed—and possibly triple it, or better" as well as "improve your powers of concentration, comprehension, and retention." The Rateometer (*30*), a widely used individual pacing method, will increase rate, comprehension, and flexibility, according to the accompanying brochure. Spache (*75*) has written forcefully against claims of vaious commercial firms.

A major controversial issue involves the claims made by the proponents of the different methods and programs. For nearly a decade now reading specialists have been arguing sporadically, but steadily. In the November 1960 issue of *The Reading Teacher*, Stauffer (*76*) referred to the Wood Reading Dynamics Method as "a magnificent ambition." That issue contained Evelyn Wood's article, "A Breakthrough in Reading" (*96*). About a year later, in an article entitled "Is This a Breakthrough in Reading?" Spache (*72*), citing Stauffer's phrase, questioned the varacity of the claims of the Reading Dynamics Program. Spache, in turn, was criticized by Stevens and Orem (*77*), who, in their article, pointed to the preliminary results of the research on the Reading Dynamics Method then being conducted under the aegis of Stauffer. Three years later, this fledgling research emerged as a doctoral dissertation in which Liddle (*50*) found that students taught the Wood method increased their reading rate but "an analysis of the data . . . does not substantiate the claim that exceptional rates are obtained without a loss in comprehension." Similar findings were obtained by Taylor (*81*) who tested 41 graduates of the Reading Dynamics Program and found that their comprehension level was 45 percent on a test composed of true-false items. Rovin (*69*), in a study involving high school students, and Thalberg and Eller (*84*), in another investigation, also found that the Reading Dynamics program produced rate gains but lower comprehension when compared with other methods. On the other hand, Adams (*1*), in an article entitled "The Phenomenon of Supernormal Reading Ability," cites twelve students who read over 1,500 words a minute with comprehension at 70 percent or more on the Diagnostic Reading Test. He further suggests that satisfactory comprehension may be obtained at "ultra-high reading speed" (*2*).

On this point of comprehension, Ehrlich (*29*) writes in the April 1963 issue of the NEA *Journal* that he tested "a few graduates of the Reading Dynamics Institute in New York City on a page of typewritten material and found that they 'read' at speeds close to 6,000 words a minute." Continuing, he notes that "to make certain they understood it, they all reread the page twice. This brought their average effective speed down to something over 1,700 words a minute. Still impressive—except for one thing: what they had read had no meaning at all! It was a garbled amalgam I had put together from two different magazine articles. I had taken two lines from one article and two lines from the other alternately until the page was full. A mean trick, but I heard no more from these men about how fast they read." Ehrlich asks, "Is there nothing then to speed reading? Is it a complete hoax? By no means. Practically every student I have met in my classes has been able to speed his reading without sacrificing comprehension." The article ends with his explanation of how this is accomplished.

Additional views on aspects of the Wood Method are presented by Wheeler and Wheeler (*95*), who write that "when thinking is unrestricted by excessive verbalizing, it is possible to read at rates of thousands of words a minute." Schale (*70*) discusses three vertical skimming methods, noting that Wood was not the first person to direct attention to rapid vertical reading. Moore (*56*), in his discussion of the skimming process in silent reading, suggests the need for "open-mindedness."

Perception

A fourth controversial issue involves perception. Writing in the same NEA *Journal* as did Ehrlich, Evelyn Wood (*97*) explains that "the Reading Dynamics method is a process of reading down the page, rather than across each line, using the hand as a pacer.

The aim is 'visual reading' with virtual elimination of subvocal speech. Readers who have to 'hear' as well as see words never read very fast because they slow down to listen."

Continuing, she writes, "The first problem, then, is learning how to let words and ideas come into the mind faster, and the second is learning how to get meaning from words and ideas without relying on 'inner speech.'

"The single word is no more important to the total understanding of what is read than the single film frame passing through the projector is to the understanding of the motion picture. As hundreds of single frames pass through a projector much faster than each single frame could be individually projected, they give the viewer the feeling, atmosphere, and detail of an entire film. Similarly, dynamic reading enables the reader to see a story much as the author thought it through."

These statements are disputed by Spache, Taylor, Pauk, Cleland, and the earlier writing of Woodworth and Schlosberg. Spache (*72*) observes that if one reads ". . . most of the words on a page, *it is impossible to read faster than 800 to 900 words per minute*. This fact derives from the amount of time necessary for (1) the shortest fixation (approximately 1/6 to 1/5 of a second) during which reading occurs, (2) for the sweep or saccade to the next fixation (1/30 to 1/25 of a second), and (3) for the return sweep to the next line (1/30 to 1/25 of a second), and (4) the maximum number of words that the eye can possibly see with a single fixation during continuous reading (probably 2.5 to 3 words)." These views are reinforced by Taylor (*81*) who observed that "through hundreds of studies involving eye-movement photography, it has been determined that no one has an average span that permits the intake of a phrase at a fixation. The EDL eye-movement photography study to establish norms for reading performance shows that the average span for the college student reading 280 words per minute is only 1.1 words." In another study involving the photographing of the eye movements of graduates of the Reading Dynamics Institute, Taylor noted that no differences existed between those who did and those who did not take the Wood Program. Mrs. Wood, however, replies that existing eye cameras are not sophisticated enough to record her students' reading patterns (*39*). Speaking at the annual meeting of the College Reading Association in April 1968, Pauk (*63*) claimed that there is no evidence to prove that minds can even handle more than one word at a time. Woodworth and Schlosberg (*98*) recapitulate earlier work on perception and subvocalization. Additional views on perception are contained in other writings of Spache (*73*), Tinker (*85*), and *Bulletins of the Orton Society* (*62*).

Subvocalization

A fifth controversial issue involves subvocalization. Cleland's U. S. Office of Education-sponsored study (*24*) has shed new light and interest on the issue of subvocalization or implicit speech. The purpose of the study was to determine the incidence of vocalism among two groups of elementary school readers and to relate methods of reading instruction to vocalism in silent reading. Involved were 211 elementary school children. Findings indicated that 1) implicit speech is manifested to some degree among all subjects; 2) the better reader had more implicit speech than the poorer reader; 3) implicit speech decreased as rate increased; 4) the group who learned through the basal reader showed more implicit speech than the group who learned through the combined basal and phonics approach; 5) the group had better comprehension; 6) as implicit speech increased, so did comprehension; 7) material presented mechanically (e.g., metronoscope) produced more implicit speech than material presented nonmechanically; and 8) better comprehension resulted. These findings appear in line with those of Edfeldt (*28*) who investigated facets of this problem at the University of Stockholm.

Machines versus nonmachines

A sixth controversial issue involves machines versus nonmachines. Some may recall the short story entitled "The Reading Machine" which appeared in *The New Yorker* in 1947. Written by Morris Bishop (*14*), the story begins:

> "I have invented a reading machine," said Professor Entwhistle, a strident energumen whose violent enthusiasms are apt to infect his colleagues with nausea or hot flashes before the eyes.
>
> Every head in the smoking room of the Faculty Club bowed over a magazine, in an attitude of prayer. The prayer was unanswered, as usual.
>
> "It is obvious," said Professor Entwhistle, "that the greatest waste of our civilization is the time spent in reading. We have been able to speed up practically everything to fit the modern tempo—communication, transportation, calculation. But today a man takes as long to read a book as Dante did, or—"
>
> "Great Caesar!" said the Professor of Amphibology, shutting his magazine with a spank.
>
> "Or great Caesar," continued Professor Entwhistle, "so I have invented a machine. It operates by a simple arrangement of photoelectric cells, which scan a line of type at lightning speed. The operation of the photoelectric cells is synchronized with a mechanical device for turning the pages—rather ingenious. I figure that my machine can read a book of three hundred pages in ten minutes."

During the rest of the tale, various problems involving comprehension and retention are discussed by the professors.

A review of another type of "literature," relating to the tachistoscope, reveals that Gilbert (*32*) found a "substantial correlation between the length of the fixation pauses students use in reading simple prose material and the speed with which the students can process tachistoscopically presented stimuli resulting from single phrases." Buswell (*19*), found only a .06 correlation between reading rate and a perceptual test involving the tachistoscope. Sutherland (*78*) found that "the group that had previous training in perceptual span made faster initial progress in improvement in rate rather than a comparable group that had not had training in perceptual span." However, Weber (*90*) found no significant difference in speed or comprehension between one group using the tachistoscope and another using textbooks.

Like the relatively few studies that have attempted to control the effects of the tachistoscope, the studies that have attempted to determine the effects of controlled pacing devices have yielded conflicting results. In separate studies, Taylor (*80*) and Wedden

(*91*) have reported rate increases with controlled pacing devices. However, the population samples using these devices in the studies of Thompson (*85*) and Barry and Smith (*4*) did more poorly than groups using other methods. No significant difference in results from different methods was the conclusion reached in the investigations of Cason (*22*) and Glock (*33*).

For U. S. Office of Education-supported research completed for a doctoral dissertation, the author (*16*) investigated the "effectiveness of four methods of increasing reading rate, comprehension, and flexibility." Involved were 255 freshmen at Syracuse University, 179 of whom were given instruction in increasing reading efficiency through one of four methods (e.g., tachistoscopic, controlled reader, controlled pacing, paperback scanning). Data indicated that all four methods produced significant ($p<.01$) gains in rate, the paperback scanning method being significantly superior to the other methods. No significant change appeared in comprehension level. All but the tachistoscopic method produced gains in flexibility. All results were maintained eight weeks after completion of instruction.

These results are similar to those obtained by Morgan (*57*) in his master's thesis, "The Relative Effectiveness of Mechanical and Non-Mechanical Methods in a Reading Improvement Program," completed ten years earlier at Oklahoma Agricultural and Mechanical College. Involved were 159 students from three sections of a reading improvement program at Oklahoma A&M College during the Spring semester, 1956. Three groups were formed: one receiving supplementary tachistoscopic training, the second receiving tachistoscopic and controlled reader training, and the third spending an equivalent amount of time on reading practice and exercise work. The control group was from an introductory psychology class. Measuring instruments were the Nelson-Denny Reading Test and the Baker Words Per Minute Exercise. Morgan concluded that, regarding reading rate, all three groups were superior to the control group with the nonmachine group being superior to both the control and other two experimental groups. Bearing in mind the limitations of the study, Morgan further concludes that "time spent, in a reading improvement program, on practice reading exercises and vocabulary drill is more profitable to the student than the same amount of time devoted to training with mechanical devices."

Similar results were obtained by Hooprich and Anderson (*41*) in their study conducted jointly by the U. S. Naval Personnel Research Activity and the Navy Enlisted Scientific Education Program Preparatory School in San Diego.

These findings involving the use of mechanical devices are in line with results of Karlin's survey (*45*) of 13 studies involving machines and reading done during two decades. He found that of the 12 studies that measured natural reading against machine reading, 11 of "the groups that received training in the former either equaled or surpassed the machine groups in rate of reading."

In a doctoral study completed in 1966 at Boston University, Duffy (*27*) found that an extracurricular reading clinic consisting of little but paced reading may actually be detrimental to college students with weaknesses in basic skills.

Following an investigation of the relevant literature, Tinker (*87*) suggests that training with the tachistoscope is of questionable value in increasing reading rate, although he observes that such training may produce other desirable effects, such as improved visual discrimination, greater attention, and heightened motivation. He also questioned the value of controlled pacing devices, noting that they are "no more effective in increasing rate of reading than are less complicated but sound classroom procedures." Pointing out that these machines are often expensive, he said "Their use becomes a ritual and tends to overemphasize the mechanical aspects of reading to the sacrifice of proper attention to the more important processes of comprehension and thinking," and he added there is usually little transfer to natural reading situations. Taylor (*83*), president of Educational Development Laboratories, has pointed out that these machines are intended as "aids to the teacher . . . and not a complete approach."

Level of research

A seventh controversial issue, adding to the confusion, involves the level of research on reading rate. Much of what is called research is merely a description rather than an experiment. Even in experimental research involving machines, most studies report the use of a combined methods approach; consequently, the problem of ascertaining how much each method contributed to the results is, of course, a weakness in these studies. The author's selected review of studies (*13*) on the effectiveness of various methods of increasing reading efficiency, which covers a forty-year period, reveals weaknesses sufficient to make one cautious in interpreting the results of many of these studies. The major weaknesses include lack of adequate control groups. Other weaknesses include those cited by Davis (*26*) and Bliesmer (*15*).

Although there are a number of fine studies, one in particular that merits attention for quality and thought-provoking implications is the Holmes-Singer study (*40*) based upon the substrata-factor theory of reading entitled *Speed and Power in Reading.* These authors write as follows:

> Reading is much more complex than is usually supposed. In the first place, it is a combination of speed and comprehension, and the subabilities needed vary according to which component is being stressed. In the second place, two individuals may read the same material with equal speed and comprehension by mobilizing quite different sets of neurophysiological, psycholinguistic, and audiovisual perceptual skills into a "working-system" marshaled to cope efficiently with the intellectual demands of the reading task. Finally, the composition of the working-system must change or shift as the child becomes an adolescent and later an adult.
>
> It is now evident that minimum amounts of certain basic skills, such as command of vocabulary, range of information, and the ability to listen with comprehension, are absolutely necessary for any degree of success in reading, regardless of the method by which the child is taught. But beyond these basic abilities a student may draw upon such unlikely factors as mechanical aptitude or elements of musical ability in order to compete successfully with his peers in reading.
>
> In addition, some interesting facts emerge from the comparative analyses of various groups. Even when there are no differences in the reading achievement or intelligence of the two groups, boys draw upon a different set of abilities than girls.

Contributing to much of the present level of research is the ambiguity of terminology and the difficulty of educators and non-educators to communicate. This failure to communicate clouds the fact that existing differences may be more apparent than real or, to be more precise, differences of degree rather than kind. Computing rate by counting syllables or words or pages or chapters reflects a difference in degree, not kind; and a close examination may reveal that there are more common than uncommon elements between and among various methods, such as the tachistoscopic, controlled pacing, and the paperback scanning. As Shores (*71*) observed, it would behoove researchers to capitalize on these commonalities.

Future investigators in this area have a great number of questions for which answers are needed. A list of these questions, with selected references, will be found in an article appearing in the Seventeenth Yearbook of the National Reading Conference (*8*). An important question to add to the list involves individual performance within certain environments. Do certain individuals, for instance, because of their own needs and personalities, make significant mean increases within one environmental setting in contrast to another setting? Further investigation between personality interaction and educational environment is needed.

In the 1968 Yearbook of the National Society for the Study of Education, Huus (*37*) writes:

> It is difficult to make evaluations of speed reading because of the variation in the level of difficulty of the materials, the format in which the material is presented, the motivation and purposes for reading, the quality of the comprehension questions used, the standards of comprehension accepted, and the background of the subjects. There is a place for rapid reading and also for skimming, but the two are not synonymous. The research to date does not discriminate sufficiently between them. Furthermore, follow-up studies to determine permanency of gains have not been reported; therefore, until more information is available, claims of fantastic gains must be viewed cautiously.

Rosen (*68*) also cites weaknesses in his review of studies involving the use of mechanical devices.

Investigators will find additional information relevant to many of these questions through the annotated bibliography on speed reading (*10*) published by the International Reading Association and through the article "Ten Important Sources of Information on Speed Reading" (*9*).

Concerning the desirability of the present emphasis

Whether the present emphasis on speed reading is desirable is a personal matter. Emerging from this survey, however, are certain desirable practices which should be encouraged. One is the use of the eye examination; nearly half of those who responded to the questionnaire said some form of eye check was included in the early stages of their program, with the most popular screening devices being the Keystone Telebinocular (*46*) and the Ortho-Rater (*61*). Another practice is the use of more formal testing procedures before and after instruction. A third practice that should be encouraged relates to the cooperation extended by commercial firms, corporations, and college and university reading centers in providing information about their programs. Cooperation of this nature will lead to increased communication, and through communication—real communication, with listeners as well as speakers—there will come a clearer understanding of the problems clouding this facet of reading. And the clearer the understanding of the problems, the closer the realization of their solutions will be.

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Pro-Challenger: VEARL G. MCBRIDE

Culver-Stockton College

THE BELIEF of the writer is that the topic under discussion is misnamed. It should be: "Speed Reading—Why Have We Waited So Long? It is reminiscent of the advertisement: "Aunt Jemima, what took you so long?"

It is amazing that for hundreds and perhaps thousands of years people have believed, without really thinking about it, that a reading rate of 200 to 300 words a minute was as much as most human beings were capable of acquiring. Perhaps the answer lies in the statement "we have not been thinking." If we had, we would long since have realized that the way we have been teaching reading is a mistake and a misnomer.

Why have we delayed?

Some writers in the field imply that if one is to understand all that he reads, he must read slowly at a rate of a few hundred words or less a minute. This attitude is a part of the misunderstanding metioned before.

We have known for hundreds of years that those students who are the best readers usually do best in school. Why have we not capitalized on this knowledge and decided that if these students could do that well with reading speeds of 300 or 400 words a minute (remember, these were formerly considered good reading speeds), they should do even better if they were to double or triple their speeds? But apparently we felt that the lower speeds were good enough. This feeling of "good enough" has been nurtured and passed on. We have known for at least fifty years that it is possible to read at much higher speeds than advocated, yet many have believed that it was impossible for a child or adult to read faster than a few hundred words a minute. One can find few references to high-speed reading in elementary reading textbooks or periodicals.

For example, in the March 1967 issue of *Grade Teacher* (*1*), there appeared fourteen articles devoted to reading and the teaching of reading. Several of them were written by well-known people in the field of reading. Not one article even mentioned the possibility that a child might be able to read faster than the 30,000,000 pupils now enrolled in the elementary schools are reading, yet all articles attempted to say something that would be useful. But, they did not succeed.

Examples taken from the writer's experience

Turning our attention to what is going on in the area of rapid reading, the writer will first attempt to qualify himself as some kind of authority in this activity. Speaking from the personal standpoint, for nearly ten years I taught and directed as the books prescribed, using the same old methods and techniques in rate of reading that everyone else in similar work was using. Then I witnessed a demonstration in which a 14-year-old girl read 3,900 words a minute with amazingly good comprehension. The desire in me to be able to do likewise was as strong as the desire of the addict for dope. I *had* to learn how to read more rapidly. Without benefit of teacher or class, I taught myself through trial and error methods. Finally the breakthrough came, and I gradually increased my speed, with comprehension, until I was reading regularly about ten to twelve times as fast as the average adult.

I began to use these techniques in my reading classes, both in speed and remedial work. Now, six years and more than 8,000 students in 151 classes later, I can report on a whole new world of reading. Strange and wonderful things began to happen to children and adults in the new kind of reading classes. First graders were taught to read rapidly and with odd eye-movement patterns. The reading speeds of sixth and seventh graders zoomed, and comprehension went up 20 and 30 percentage points. Adults, perhaps having been so long ensconced in old reading habits, did not exactly zoom but progressed steadily until they could read 1,000, 2,000, and 5,000 words a minute. A mother of eight children learned to read 8,000 words a minute and declared rapid reading to be the greatest invention since the wheel. A little girl who had just turned five and had already taught herself to read was enrolled in a rapid reading class. In a matter of weeks she could read several thousand words a minute from second grade books. Her highest official speed was 12,000 words a minute.

And this was one year before she entered first grade. Well-meaning but wrongly trained teachers, however, have attempted to "normalize" her and now, in the third grade, she dislikes school and reads only between 2,000 and 3,000 words a minute. To my knowledge, she is the first child in history to have read at those speeds at that age. Now there are others who have accomplished or nearly accomplished what she did at that age. But she opened our eyes to some marvelous possibilities. Those of us who fail to get on the bandwagon with this kind of thing are missing some exciting times.

Additional proof

With 151 classes in Panoramic Reading (that's what the writer calls his reading program) having been taught, it is possible to relate all kinds of exciting and unbelievable stories of children and adults who read in odd and wonderful ways. To relate just a few of the more recent incidents: there was the reading demonstration given before a church group on December 12, 1967, when a junior high girl read 6,000 words a minute, two college students read 5,000 and 1,700, respectively, and a third grade "remedial" child read 1,400 words a minute with "smooth comprehension." This was in Quincy, Illinois. On January 9, 1968, six college students participated in a reading demonstration before 800 of their peers. Their speeds ranged from 1,790 words a minute to 11,650 words a minute. All read with fair to excellent comprehension.

On February 26, 1968, four college students, a 12-year-old "remedial" girl, and her two parents read for a PTA in Canton, Missouri. The "remedial" child read 10,000 words a minute and the other six ranged downward from that to 1,835 words a minute. On March 14, 1968, this child, together with a high school sophomore and a college sophomore, gave a reading demonstration before the Quincy, Illinois, Women Teachers' Association. On that occasion the "remedial" child read nearly 31,000 words a minute, while the other two read 5,000 and 6,000, respectively. In relating what she had read, the 12-year-old went on and on with the details until finally we had to stop her in order to give the others a chance to tell what they had read. In all cases, the comprehension was acclaimed as *more-than-adequate* and sometimes *astonishing* by the audience.

In their reading they all took advantage of two discoveries we have made which enable people to read better. These techniques are not yet in the literature but are discussed at length in a book hopefully to be published soon.

But, you say, these are just isolated cases and prove nothing except that obviously some of the more gifted students were taught to read rapidly. The response is "not so." The six college students might all be classed as "remedial." They and 57 others were required to take courses in reading improvement because they had failed to make a certain minimum grade on an English entrance examination. The third grade boy and the 12-year-old girl were also remedial cases. The average reading speed of the college students at the end of the semester was slightly under 2,000 words a minute on the final examination; comprehension for this group averaged 73 percent. Contrast this level with their beginning scores of 179 words a minute and 51 percent comprehension.

An experiment in speed reading

Let us look at some earlier figures. In the spring of 1963 Methodist College in North Carolina undertook a task which was called "An Experimental Program in Speed Reading" (2). The following information was taken from the unpublished abstract of that program. Under "The Character of the Research" was posed this question: "To what extent can children between the ages of eight and thirteen be taught rapid reading skills?" In discussing the problem, the planners of that program pointed out that for two or three years previous to that time there had been much ado about the extremely high speeds in reading acquired by certain prominent men. Little or nothing had been said about the possibilities of teaching these skills to children. The next step, it was felt, "Was to experiment to determine how effectively, if at all, speed reading could be taught to young children who had already learned to read through ordinary processes."

Teachers of the elementary schools in Fayetteville and Cumberland County, North Carolina, were asked to recommend their top students for the experimental program. Twenty-five boys and forty-five girls were selected as participants. These were youngsters who would be in grades four through nine in the next school year. Much data were gathered concerning them from their teachers and parents, and the American School Intelligence Test was administered as were reading test materials from carefully selected graded books.

The 70 children were divided into eleven groups according to age and were taught rapid reading skills by instructors who themselves had learned these skills. The program was five weeks in length with the children receiving instruction one hour daily. They were to practice at least one hour a day outside of class. The following information concerning the results is taken verbatim from the abstract:

> *Results*
>
> The results indicated that children, whether of high or average I.Q., can be taught effectively to read rapidly with a high percentage of comprehension. Children of average intelligence can read as rapidly with good comprehension as those of above average mental ability. Complex comprehension skills showed to better advantage among those of average ability in mentality. Children maturing early mentally and physically made higher scores than others. Girls read faster, but with no better comprehension, than boys.
>
> *Summary and Conclusions*
>
> At the begining of the program the average reading rate was 254 words per minute with an average comprehension of 61 percent. At the close of the five weeks classes the average reading rate was 13,244 words per minute with an average comprehension of 86 percent. The lowest reading speed at the beginning of the program was 134 words per minute. The lowest percentage of comprehension was 20. The highest rate of words read per minute at the end of the program was 87,840 with 90 percent comprehension. The lowest rate of reading at the close of the program was 720 words per minute with 100 percent comprehension. Children between the ages of 11 and 13 made the greatest gains.

> The results of the experiment exceeded all expectations which the planners had for it. We have concluded that rapid reading can be taught effectively to children as young as eight years of age and that older children can profit even more from such instruction.
>
> *Implications*
>
> New methods in the teaching of reading should be sought. Teachers of all levels can profit from courses in college emphasizing new techniques and possibilities in the whole area of reading, including the possibility of capitalizing on children's ability to recognize and to quickly adjust to new situation.

It is evident from the material just cited that at least 70 children can be taught rapid reading skills. The writer can testify from experience that thousands have been taught successfully. Most of his 151 classes have been made up of both children and adults. More often than not the young people do better than the adults. Furthermore, when there are children in the class, some of them invariably are poor readers, for the writer now includes all kinds in the same group and conducts an individualized program, the only right and sensible thing to do in any kind of teaching situation.

When should we begin?

There is no question about our ability to teach rapid reading skills to children or about their ability to learn these skills even faster than adults. But how young should the children be for this teaching to be done effectively. When is the best time, agewise, to begin this kind of teaching? The best place to begin anything is usually at the beginning. So let us begin with the children as they enter their first year of formal schooling. The writer has had hundreds of these youngsters in his classes, and he knows from experience that this is the best time to teach them in school. Just as a matter of interest, the writer believes that the *very best* time to teach children rapid reading is when they learn to read their first word, whether it be at one year of age or at six. However, since this kind of thinking may be thought to be a little far out, another study, which involved grades one through twelve, will be cited. Only data will be included concerning the eight first-grade classes which took part in this study.

In Columbus County, North Carolina, a reading program was launched under the auspices of the government's poverty program (3). One hundred seventy-six first graders were participants. In the spring of 1966 the children were given nine weeks of instruction in rapid reading. Many remedial reading techniques were used. The beginning average speed of the 176 children was 36 words a minute. (Remember, these were extremely culturally deprived children.) Average comprehension at the beginning of the program was 51 percent. At the end of the nine-weeks period the average reading rate was 503 words a minute, and the average comprehension was 74 percent. The highest single rate per minute was 905 words with a 90 percent comprehension score.

If these figures seem to be unusually outstanding, one should not wonder too much or too long about them. After all, how often do we give first graders opportunities to do things like reading rapidly? How do we know what they can do if we do not give them a chance to show us?

One more reference to first graders and speed reading will be presented. At Fort Bragg, North Carolina, a first grade teacher, operating against the wishes of the school principal, did some teaching of rapid reading to her children. She estimated that perhaps three weeks in all were devoted to this kind of teaching. In April she asked two first-grade teachers across the hall from her to help her test her children, one at a time, and asked if they would like to test their pupils in the same way. They readily consented. The results showed the average speed of her class to be 550 words per minute with 86 percent comprehension, while the other two classes tested 99 and 100 words a minute, with 73 and 76 percent comprehension, respectively. The highest reading speed in the first teacher's class was 1,250 words a minute with 90 percent comprehension. The highest speed in the other two classes was 245 words a minute with 100 percent comprehension (3).

Let's finally get wise

To those of you who think you have reason to question, who doubt that rapid reading should or could be taught effectively to human beings whose minds have developed a highly complex machinery even beyond thinking machines, the writer suggests that you should do some rethinking.

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Con-Challenger: M. AGNELLA GUNN

Boston University, Professor Emeritus

DURING THE 1968 IRA convention in Boston members were seen wearing buttons saying *Happiness Is Reading.* Other buttons said *There's more to living than reading.* The writer would like to have a third kind of button saying *There's more to reading than speed*!

In this supersonic age seeming to be against speed is heretical. It is tantamount to being against virtue, motherhood, or the flag! In addition, it seems to be old fashioned and quaint, if not antediluvian. However, here is a little pretest for the reader to take before the writer plunges into the fray. What do the following three situations have in common?

Situation 1

Scene: A cruise boat. Tall funnels and lifeboats seen in the background. Two attractive young things talking.

1st girl: Why are you moping? Aren't you having fun on this trip? Don't you have a date with that good-looking first officer tonight?

2nd girl: I don't know what's happened to him. He's surely cooled off since last night!

1st girl: I think I know what the trouble is. Don't worry. I've got the answer. Use *Fresh Breath!*

Cut to full-dress, swinging dance on upper deck. 2nd girl joyously, over the shoulder of a tall officer in whites, says:

2nd girl: It worked! Darling, you're wonderful. He's wonderful. *Fresh Breath* is wonderful!

Situation 2

Scene: Corner Park Avenue and 52nd Street, New York City. Group of Brooks-Brothers types laughing and talking as they wait for the traffic light to change.

Attractive girl walks by. No dice; men continue talking. Second girl walks by. Wind blows. Men turn to give full, approving attention.

Silken voice comes on saying:

Girl-watchers don't watch you?

My dear, what you need to do is to wear Snug-hose!

Situation 3

Scene: Open field in country showing trees, flowers in distance. Back lighting. Characters in soft focus and slightly blurred. Young girl runs lightly through meadow, a slightly disheveled yard of shiny blond hair flowing out behind her. She's pursued closely by an eager, dark apollo.

Silken voice comes on, intimate, as Dorothy Parker would say, as the rustle of sheets: "Don't blame *us* if you can't control him when you're wearing 'Capture' perfume!"

Now back to our question: What do these three situations have in common: Elementary, my dear friends. They all *overstate, overgeneralize, oversimplify*. The undeceived know that they could spend a fortune on face cream, eye-shadow or perfume but that the stag line does not necessarily start to form on the right. That, then, is the writer's main quarrel with the current emphasis on speed in reading. It overgeneralizes, oversimplifies, overstates.

Most of the advertisements of the commercial agencies for increasing reading speed are good examples of slanting in writing and of seducing the innocent. The language is directive, with concomitant promises. "Stop reading the way they did 100 years ago." Do certain things, and certain consequences follow. The appeal is strongly affective. "Read faster," they say, implying you will read better. Skillfully inserted, too, is the pull of association: "Teachers, engineers, students, senators, and 180,000 others follow our method." When the stated or implied promises do not become reality, the result can surely be destructive of trust.

With friends like these advertisers, what reader needs enemies? Advertisers are artists of verbal persuasion. Their prose and odes to speed exude a kind of verbal hypnotism. They sell speed, more speed, and still more fantastic speed. Along with their emphasis, is the implicit dangerous idea "This is it! *Speed* is the answer to your problems." Such strategy gives a myopic, incomplete, distorted view of a complicated, difficult process. It sees a part instead of the whole. An 11-year-old boy reads—supposedly—at a rate of 160,000 words a minute. Well, Well! *Mirable dictu!*

This brings the writer to the next point—one of definition. What do we mean by "reading"? If we ask with Falstaff, "What's in a word?", the answer may well be, "*Plenty*—especially if the word is *reading*." Part of the problem is semantic. What more is involved in this complex process besides visually moving the eye and physically running the hand down a page as one gleans obvious ideas?

Regardless of what grammar might indicate, the word *reading* is incorrigibly plural. When we who are working with the total process of reading use the term, it does not mean just quick generalized understanding of what is read. That is included, of course. But it is an early part of the process, a first goal, not a final objective. Or to put it another way, fast cursory grasp is only one tool of the reader, not the master reader's whole kit of tools.

Beyond mere comprehension—as rapidly achieved as is consistent with one's power and one's reason for reading—are the higher goals of reading and thinking. On these levels, the reader goes beyond asking himself, "What did it say?" to more probing questions such as, "What does it mean? How does it relate to what I already know?" And on a still higher plane of thinking, he asks, "What do I think about what I've read?" On what level of sophistication is a boy of 11 (or a man of 44) operating when he is "reading" hundreds and thousands of words a minute?

So like Alice's Humpty Dumpty, we are the masters here, and "reading" to us is not a swift, once-over-lightly, sometime thing. It is the constellation of skills associated with thinking accurately, critically, appreciatively—rapidly or slowly as the situation demands—about what one reads.

Next, discussion will proceed briefly on the question, "Is emphasis on speed reading good?" In the first place, the question is a poor one. It seeks a two-valued answer: *yes* or *no*. The answer of the writer does not fit into those categories. She wants to give a qualified answer: "Yes, but . . . ," or "Yes, if . . . ," or, "Yes, when . . . ," or "No, unless . . ."

Not only does this question seek a two-valued answer, it seeks to produce a signal or automatic reaction. To be with it today, you had better be fast. The word itself has a kind of charismatic halo. The affective connotation of speed is a favorable one. Fast is good. So, of course, slow is bad. But slow reading is not necessarily bad. Nor is fast reading necessarily good. Reading rate is a minor element in the total operation; by itself it is almost meaningless. It is rather like rate of speed in driving a car. Any given speed can be either too slow or too fast depending upon the circumstances.

In reading, is rapid rate good?:

Yes, in certain situations.
Yes, with some types of materials.
Yes, for some purposes.
Yes, up to a point.
Yes, when built on the basic reading skills which support it.

But reading slowly is not the answer either. Some read slowly with poor results; others read rapidly with no better results. The reading rate itself is not important, but what goes on in the reader's head at a certain rate is vitally important. The limitation of this speed-approach to reading is not in the one area it chooses to stress but in the vast terrain it chooses to ignore.

How fast do you read the instructions for a Do-It-Yourself project? Recently the writer received a great, flat carton in which was packed an unassembled picnic table and benches, complete with mimeographed instructions for assembling. Week-end house guests included three teachers who had taught, or were teaching, reading. All of us took turns reading, and more importantly, interpreting, and still more importantly, applying the message. Did we read slowly? We did, indeed! We not only read slowly, we stopped, checked, and then reread. Then we read aloud. We discussed. Yes, we argued. We pointed with our fingers to what we were reading. Were we unmotivated readers? Disinterested? Handicapped? Not on your life! But the going was tough. The reading traffic was heavy; the instructions were compressed and the procedures, strange; the vocabulary was unfamiliar. Our combined reading rates would probably have gone off the wrong end of the graph. But our reading was efficient. Our comprehension was high. Our interpretation and application were faultless. Our mission was accomplished (you should see our garden equipment). But rapid rate? No. That we did not have.

Faith in speed is as unlikely to result in salvation of souls in reading as is faith in any prehistoric form of word-magic or myth.

On the other hand, contrast such a task in reading with that presented by some of today's light fiction—you pick the title. You can read with the TV on full blast; you can listen for the telephone; you can eat; you can hear the sprinkler system on the lawn or the folks in the next apartment; you can tease your dog with your foot; you can even carry on a kind of desultory conversation without being distracted or losing anything of the familiar yet predictable details, the expected facts, the sometimes clever but rarely disturbing situations, or the obvious, seldom-varying sentence sequences. It is easy, trivial reading. It may be relaxing reading. It may even be interesting reading, but it is impoverished literature. The traffic in ideas is light; the reading road, open; the material and language are familiar. Such printed matter provides little evidence of what reading at its best has to offer. You can zoom through it as rapidly as you wish, maybe as fast as you can flip the pages—until you are wakened by the book's slipping out of your hands.

One columnist, Shana Alexandra, writing in *Life* Magazine of a very different kind of reading says, "I certainly don't want to read Bertrand Russell at 30,000 words a minute, or even 700. I just want to hear and savor everything he has to tell me, word by word by slow-moving, wonderful word."

Between these polarities of speed are the countless variations in reading speed demanded by different reading material, different reading objectives, and differing degrees of power over intricate clusters of reading skills.

High, variable reading rates are something like money in the bank. You can hardly have too much but you need to learn to use both money and speed wisely. The efficient, skillful reader can move with a kind of relentless concentration through a veritable mountain of material at speeds which to the plodding reader seem fantastic. In effect, the disciplined reader tunes out distractions and, almost like a machine, cuts through a pile of materials. If you watch him closely, you will see that he scans, skips, skims, stops, and reads closely as his interests and the relevance or importance of the materials dictate. He has become the effective user of a valuable, high-powered reading tool.

Our advice to readers should be something like this: Reading speed is—or should be—a variable. On a clear, open highway with nothing to challenge you, nothing memorable to cling to your mind, speed right ahead. But with heavy traffic of demanding ideas—say in a symbolic poem by McLeish, an existentialist play by Sartre, a tightly reasoned column by Reston, a short story by Faulkner—slow down. Even draw off to the side and stop completely to consider, compare, contrast, evaluate, absorb.

Emphasis on increasing reading speed unquestionably is desirable—if it contributes to the development of readers who not only read rapidly but, more importantly, who read flexibly, accurately, critically.

For a quick summary the writer offers a verse written by a harassed reading teacher:

HURRY HURRY

One aspect of reading is speed,
But it's darn far from all that you need!
So don't be misled
By the stuff that you're fed
In the ads that equate it with "read"!

Comprehension entered the reading vocabulary in the early 1920's when teaching children how to get meanings from reading was first begun. Since that time hundreds of studies have been conducted in regard to this important aspect of reading instruction. As a result, man has learned a great deal about comprehension. At present, however, some people are questioning whether full use is being made of the accumulated knowledge. The following papers on this subject should be enlightening.

Do We Apply What We Know About Comprehension?

EDMUND H. HENDERSON
University of Delaware

THE QUESTION "Do we apply what we know about comprehension?" asks two things: "What do we know?" and "What do we apply?" Both questions are difficult to answer objectively. The first is particularly so because, while theories abound, the state of our knowledge is, in fact, very incomplete. For this reason it would appear that the question should be altered to read "What do we think to be true about the process of comprehension in reading?" and "What effects, if any, have these thoughts had upon classroom practice?" In this form it is perhaps possible to approach an answer that may qualify as fair and neutral.

In what follows an attempt will be made to contrast the behaviorist and the cognitive views of learning and language and to identify some methodologies that appear to have been derived from these somewhat opposing positions. Conclusions about the topic question will be based upon this analysis.

Stimulus—response versus cognition

S-R Theory—Watsonian behaviorism—has become as American as apple pie and Whistler's Mother. Despite our mild embarrassment about its Russian origins, we have taken it to our hearts; and operationism now so dominates the theory and practice of teaching that educators, like preoperational children, often cannot see themselves because of it.

That this should be the state of affairs is a little ironic, for American educators have regularly rejected the behaviorist model as inadequate for their complex learning goals and have exposed instead the more mentalistic theories of cognition. It is not, however, just a case of *saying* one thing and *behaving* another. Rather, it is that the less comprehensive but more explicit behaviorist model has been more productive. It lends itself more easily to the construction of teaching materials that can be mass produced. It appears more concrete. Psychologically there is a sense of reality and comfort in the sequence, stimulation—response—reward. On the other hand, no matter how appealing it may be to our sense of self-complexity, there is much vagueness and uncertainty in the cognitive game of staging a setting in which insight may occur.

Truth, however, does not lie wholly in either position nor is one way more "scientific" than the other although such an image is sometimes claimed for the behaviorist. Each position has its assets, its liabilities, and its more appropriate areas of application. DeCecco's excellent book of readings gives a picture of both the divergence and the convergence of the two positions as they relate to language and thought (*4*). In one section he includes Skinner's analysis of verbal behavior in which the noted behaviorist makes this bold assertion:

> The basic processes and relations which give verbal behavior its special characteristics are now fairly well understood. Recent work has shown that the methods (i.e., operant conditioning with laboratory animals) can be extended to human behavior without serious modification.

Next, one reads a review of Skinner's text by Chomsky. "In the present state of our knowledge we must attribute an overwhelming influence on actual behavior to ill defined factors of attention, set, volition, and caprice." He challenges the consistency of Skinner's use of "stimulus" and response and asserts that a psychologist following this model must either declare and accept a large area of "unknown" or restrict his investigations to that segment of behavior which is lawful and not capricious.

In the same context the psycholinguist Miller concluded:

> If the hypothetical constructs that are needed seem too complex and arbitrary, too improbable and mentalistic, then you had better forego the study of language, for language is just that complex arbitrary improbable and mentalistic and no amount of wishful theorizing will make it anything else.

Thus men of substantial talent and experience differ.

Between these poles there is, of course, genuine accommodation. The so-called neo-behaviorists have modified the S-R model in various ways to account more precisely and not capriciously for the complexity of language function. (Osgood's mediated response, Gagne's hierarchies, Berlyne's chains are examples.) Nonetheless, at a simple and practical level one is forced to recognize that a basic difference in emphasis between the two positions does exist and that this difference does influence curriculum.

However eloquently the chain of responses may be elaborated, at a critical point one senses the saliva and the bell. *O* is stimulated and produces a response which is rewarded, and further reinforcements are then scheduled over time by *E*. As these events are complexly elaborated, this S-R model takes on the global quality of the cognitive field. But a difference lies in this—the cognitive position focuses not upon the stimulus and the response but upon the action of the individual upon a relatively unconstrained environment.

S-R theory and reading materials

An examination of typical reading instructional material shows from which psychological position each is derived. The most obvious representative of behaviorism is the so-called programed-reading approach which is a direct application of Skinner's principles. In these materials an attempt is made to identify each behavioral outcome necessary to the attainment of a certain performance and to arrange these intervening behavior outcomes in their proper sequence from nonperformance to performance of the educational objective. Then moving along this chain, the learner successively produces and reinforces the responses that will sum to the desired skill. The success of such a program depends, importantly, upon the precision with which the writer has analyzed the educational objective, and herein lies a limitation of and practical difficulty in the approach. Also, the requirement that outcomes be concrete specifiable behaviors, a goal of doubtful attainment (*5*), makes this approach more applicable to some tasks than to others. It is easier to program arithmetic, for example, than reading and easier to program word-recognition skills than comprehension skills. The typical programed reader today follows a somewhat more detailed, though certainly standard, sequencing of word-recognition skills. When, on the other hand, its goal is the more cognitive skill of comprehension, it appears to differ not at all from the study or skill tests of the common basal reader.

It would appear, then, that the unique feature of the programed reader is its self-servicing format. Otherwise, it is like the standard basal program which itself is clearly built upon the S-R model. In both, for example, phonic skills are sequenced and practiced on a planned schedule. In both, new vocabulary is introduced on a word-by-word basis, and in the basal reader these words are reintroduced according to a strict reinforcement plan. Indeed this vocabulary control is adhered to so strictly that the structure of the language itself is violated (*2*). Clearly this circumstance, true of nearly every basal reader program, is as contrived as any Skinner box, and the psychological theory and purpose in each case are the same.

S-R theory and comprehension training

When one considers the manner in which comprehension is taught in the typical basal reader program, the particular emphasis or focus of the behaviorist becomes even more apparent. The silent reading of a passage involves, in Thorndike's terms (*17*), all the attributes generally attributed to thinking. To deal with this, one may take the cognitive position, analyze the parts and sequences of the process, and develop specific training for each. The behaviorist, however, avoids this step. Instead, he leaves change of a cognitive nature to inference based upon observable behavior. In terms of reading comprehension this terminology means that the behaviorist will avoid a direct analysis of the reading-thinking process but will seek to influence this process by reinforcement of its consequences—i.e., the answers to questions about a passage. It should be noted that the availability of this kind of behaviorist response—an answer to questions—is no guarantee that it is an entirely valid or complete consequence of comprehension. The cognitivist would argue that it is not. Nonetheless, the typical basal reader program is consistent with the S-R psychological position in that comprehension training consists largely of teacher-formulated questions posed, sometimes before, occasionally during, but usually after, a silent reading assignment.

The evaluation or testing of reading comprehension achievement typically follows a similar question—answering formula. Research in this area has succeeded over the years in differentiating between two factors—factual recall and something more than that called inference (*15*). Thus it is possible to give differential training in these two modes. In actuality, practical questions of various types are usually included; and Davis (*3*) has recently reported that if separate passages are used, a number of these question categories may be discriminated factorially.

It is possible, of course, to study reading comprehension in various other ways. One example is the currently popular cloze test, or the cloze test augmented by retrospective interviews as described by Jenkinson (*10*). Another very interesting example, employed by Johnson (*11*), is the use of overlapping free associates of relevant concepts. Nonetheless, the straight question-and-answer, teach-by-test, or reinforcement model is both the criterion and the strategy for teaching reading comprehension in the typical basal reader program. When it is held in mind that these readers are used in 90 percent of our schools (*2*), it may be said that this is the strategy being used to instruct most of today's school children in this country.

Cognitive implications for instruction

The implications of the cognitive position contrast with those of the S-R model in three principal ways. First, the emphasis shifts from the teacher to the pupil as the responsible figure in the learning task. It is not what the teacher does to the pupil but what the pupil does to the material that is significant. Second, since it is the pupil's act that initiates learning, it is he who selects from the field what is to be acted upon. This circumstance requires that the field be presented intact, not preselected or fragmented by the teacher. Third, a cognitive approach leads to and indeed implies that a detailed analysis of the thinking skills has been made. In the learning-to-read process it is not mastery of content but the act of selection and the exercise of these cognitive skills that are significant.

Piaget conceptualizes the cognitive domain with a biological metaphor of equalibration, assimilation, and accommodation. One premise is that a healthy organism is self-directed and acts upon its environment much as a healthy boy will seek food of a balanced nutritional value. A second premise is that the organism acts upon that aspect of the total environment which is assimilable. A third premise is that through the process of accommodation the organism changes his capacity for assimilation by reorganizing and combining overtly or covertly various schema which themselves in primitive form were simple reflexive behaviors (*6*).

It follows from Piaget's model that the learner will come to know how things in a sequence or order which is inviolable. Nor will any amount of imposed drill of the S-R type alter this circumstance. He may not accommodate to that which is not assimilable. That this is a correct accounting has been repeatedly demonstrated, first by Piaget in his own freewheeling clinical method and more recently with due experimental rigor by Laurendeau and Pinnard (*13*), and Almy, et al (*1*).

Cognition and beginning reading

One aspect of these developmental findings has particular relevance for the topic of reading comprehension. When the child is at a certain stage, termed "preoperational" by Piaget, there are specific cognitive functions that the child cannot perform. Among these is the operation of reversability which makes possible an intellectual transposition such that one can see himself as others see him, take the place of the other, empathize, and so on. It is this condition that Piaget labels as "egocentricism"—being locked in the self and unable to move backward and forward on a self-other continuum.

In terms of reading comprehension, one may see that it is precisely this operation which is necessary in order to apply meaning to printed language. Only by taking the place of the other is one able to anticipate coming events and so create the dynamic of context which facilitates the recognition of words, makes possible the selection of meaning, and gives purpose, focus, and efficiency to the total act. Thus it would appear that comprehension, not word recognition, is the prerequisite for beginning reading; and one should not expect children to begin to read, in any meaningful sense of that word, until this necessary cognitive function has developed. Piaget's work, as well as others, shows that this change occurs generally between the ages of five and seven. That this is the time children have been learning to read for centuries is probably not an accident. Moreover, Piaget's grand disregard for the exact time of the change and his emphasis upon the inviolability of the sequence and the need for vigorous activity within each sequence pronounce clearly his belief in the folly of all attempts to beat-the-game through education.

By some, beginning reading instruction is viewed as a period for decoding and the acquisition of a sight vocabulary, and the instructional model employed for this phase is usually behavioristic. The Piaget model suggests that beginning-to-read is an integral part of an overall language development. In this circumstance it follows that a self-directed learner requires a setting in which language, both oral and printed, are natural and purposeful communication rather than isolated substandard language segments to be acquired on a conditioning basis.

The cognitive model, in short, suggests that the learning-to-read processs should, insofar as possible, resemble the circumstances in which oral language itself was acquired. While it is held by some [Lenneberg (*14*), for example] that the advent of oral language is at least in part innate, two aspects of this process are notably in keeping with the cognitive model. In learning to speak, the child is exposed not to one word at a time selected by a teacher but rather to the total language system from which the *child* selects those parts which have usefulness for his own personal and social communication needs.

One sees here a basic rationale for a methodology which begins with experience, develops oral language that is sufficiently fluent to communicate purposefully and to anticipate outcomes, and then exposes the beginning reader to the printed form of his own language complete in its natural form. The learner acquires a sight vocabulary from this medium on a functional self-selection basis. Controlled vocabularies are avoided, and words are learned only in the course of a purposeful and self-directed quest for comprehension. Thus, a shift in psychological model yields a fairly dramatic shift in method—one that is commonly termed today the language-experience approach. While no survey that gives up-to-date figures is known to the writer, it would be his guess that less than one percent of today's school children are so instructed during primary grades.

Cognition and the reading-thinking process

The cognitive position also makes possible an analysis of reading comprehension beyond its beginning stages. When considered in a communication framework, the reading process may be described as an interaction of certain divergent and convergent cognitive skills (*8*). Both before and during the reading of a passage, the skillful reader engages in both causal and imaginative thinking, by means of which outcomes in the reading material are anticipated and predicted. Such decision processes are considered essential to comprehension and suggest an active participation of the reader with the material, in which hypotheses about outcomes are made. The decoding process, itself, is directed toward a testing of these hypotheses, and comprehension is reached as the hypotheses are confirmed, disconfirmed, or retained.

This theoretical view has been extensively developed by Stauffer (*16*) and lends itself to a method of reading comprehension training that is quite different from one derived from the S-R model. In the Stauffer approach, questions over the content are used only as an occasional testing device, not as a conditioning mechanism. Instead the reader is led to declare, in a group setting, the decisions he makes at various points just prior to and during the reading of a selection.

The pupil is given practice in divergent thinking when he is asked to project several possible story themes on the basis of minimal evidence—as a title or a single picture. Both convergent and divergent skills are studied when one group member observes the evidence another used to anticipate a turn of plot and when he notes how this reader then rejects or affirms old hypotheses and advances new ones. Judicious openmindedness is practiced as the reader experiences the value of maintaining a reasonable prediction until sufficient evidence is given (9). Convergent skills are exercised when he declares his thoughts about how a story will end or a problem is resolved and gives reasons for the decisions he has made. In this way the covert thinking process is made explicit, and the adequacy and basis of each decision are weighed and modified toward greater efficiency.

This cognitive-based strategy for comprehension training was developed during the early fifties and included in a new language arts reading series published in the early sixties (Stauffer, et al, 1962). Consistent with the psychological model, the program recommended that the grotesquely controlled preprimers be abandoned and a language-experience approach used in their stead. Basal readers were to be used no more than half the year and then as a means for group comprehension training, not for conditioned word acquisition, the remainder of the time being devoted to guided self-selection in trade books. Finally pupils were to be held responsible at all times for the application of word-attack and concept-development skills. No vocabulary was pretaught. A small number of pupils are pursuing such a reading program at this time. In addition, again according to the Harvard Report, one might predict that a small percentage of American school children are following an individualized reading instruction program (2).

National concern for purpose

Before turning at last to the topic question, it is necessary to mention the vigorous research activity by all groups—behaviorist, neo-behaviorist and cognitivist—that has addressed itself to critical thinking, problem solving, discovery learning, and the like during the past decade. Names like Bruner, Gagne, Berlyne, Suchman, Klausmeier, and Covington come to mind at once. Nothing could be more certain than the determination of these psychoeducational leaders to provide a means of instruction that is more meaningful, purposeful, and self-sustaining. Progress has been and is being made in the areas of science and math—yet one looks in vain, the writer believes, for similar changes of a substantial nature in the basal reader programs that are used in most American schools. The Ohio study of Critical Thinking and Reading (*18*) is an example of the tentativeness with which we are moving. Here, a really fine study with very interesting work in the critical thinking area advances us only to the conclusion that critical-thinking training facilitates reading comprehension. It seems clear that the present state of research in the cognitive and reading-thinking processes would permit far more substantial enterprises than we now support.

How comprehension is taught

What do we think we know about comprehension training, and what is its effect? We have firm evidence that a curriculum derived from the S-R model, one which reinforces the correct answer to comprehension questions of different kinds, affects a certain kind of reading behavior positively. In the course of such training, pupils do make gains in power of comprehension as measured by standardized tests; and they are scoring higher on this measure today than they were fifty years ago (*7*).

Further, it is evident that this approach has lent itself to the mass production of teaching materials—machines, kits, self-servicing devices of all sorts—which have met the demands of an educational system faced with a population explosion and an egalitarian revolution.

What about the other things we think we know about comprehension—those ideas based upon a cognitive model and developed through analysis and equally intensive research: It would appear that their effect on the curriculum is comparatively negligible. Furthermore, when field studies have been conducted, the differences in achievement as measured by standardized tests are not particularly impressive. In the Seaford study, about which the writer has some close, personal knowledge, pupils following what Stauffer now labels a comprehensive reading program were superior to the basal reader control group consistently for three successive years. The differences were significant statistically. Nonetheless, one must still ask what the human significance of this difference is. What does it mean when we say that one group is .5 years ahead of another on the standardized test measure? The writer is personally disinclined to believe very deeply in such a difference.

The difficulty obviously lies in the measures that we use. Power of comprehension divorced from the concept of maturity in reading is meaningless. One must ask what does a pupil choose to read? How well integrated is his choice with his personal interests, purposes, and responsibilities? How versatile is he in applying techniques that yield either breadth or depth of comprehension? What effect has his reading upon his life?

It seems to the writer that we now have the scientific knowledge and the pedagogical technique to strive toward these comprehensive reading-instructional goals. It is our responsibility to be clear with our clients and ourselves about what we are affording and what we choose to afford.

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Pro-Challenger: DONALD L. CLELAND
University of Pittsburgh

THE CRUX of this topic rests upon each teacher's understanding of comprehension. How much does each of us understand about this topic? It would take sophisticated research to find an answer to this question. Do we apply what we know? Again, only thorough research will give us the answer. Perhaps we should phrase the question from the standpoint of the individual. Maybe we should ask, "Do I apply what I know about comprehension in the learning atmosphere that I design and manipulate for the students in my classes?" Such a question would offer cause for all of us to pause and reflect on the efficiency of our individual teaching.

In view of the question so phrased the writer's remarks will fall within the context of his own understanding of comprehension. Accordingly, each reader of this treatise must answer the question for himself. Hopefully, remarks in this paper will cause each teacher to reexamine his own concept of the reading process specifically from the standpoint of comprehension.

What is comprehension? The term is found so frequently in literature that its very profusion may lead us to minimize its importance. It is distressing to note that some books on methodology have given only token discussion to it. This condition undoubtedly is a sin of omission rather than commission. The writer, however, found it necessary to rely heavily, by and large, on periodical literature rather than on books for information concerning the nature of comprehension.

Many scholars have commented on the complexity of the process of approximating meaning portrayed through the language patterns of gifted authors. One that seems apropos at this time was written sixty years ago by Edmund Burke Huey:

> And so to completely analyze what we do when we read would almost be the acme of a psychologist's achievements, for it would be to describe very many of the most intricate workings of the human mind, as well as to unravel the tangled story of the most remarkable specific performance that civilization has learned in all its history.

The fact that the reading process is complex, that it is premised upon the modes of thinking, has not deterred scholars from trying to fathom its depths. How familiar are we with such models as have been structured by the following scholars?

1. The substrata-factor theory, as developed by Holmes (*1, 2*) and his coworkers. In this structure he has attempted to relate ideas of the function of the brain to the reading process.
2. The neuro-chemical model as designed by Smith and Carrigan (*3*). They postulate that a chemical imbalance, due to inappropriate amounts of acetylcholine and cholinesterase in the synopses is the primary cause of reading retardation.
3. Implications to the teaching of reading by Spache's application (*4*) of Guilford's famous model (*5*) of the structure of the intellect.
4. McCullough's "Schema of Thought Patterns" which has some factors in common with Guilford's three-dimensional model of the structure of the intellect.
5. The Barrett (*6*) Taxonomy of Cognitive and Affective Dimensions of Reading Comprehension. Clymer, who reports this model, claims that Barrett identifies two misconceptions which teachers face in instruction in comprehension: a) considering comprehension as a single unitary skill and b) assuming that comprehension contains so many separate skills as to be unmanageable.
6. The Gray and Robinson (*7*) model, essentially a skills model, which maintains that understandings, skills, and attitudes can be classified under four headings; namely, word perception, comprehension, reaction and evaluation of ideas, and assimilation of what is read.
7. Cleland's offer of a comprehension model (*8*) in which he has specified five processes which constitute the reading act: perception, apperception, abstraction, ideation, and application.

Thus, even a cursory glance of the literature reveals that no one model is universally accepted.

The question with the individual still remains: Do I apply my understanding of Spache's or Smith and Carrigan's, or the Gray and Robinson, or the Barrett Taxonomy of Cognitive and Affective Dimensions model to the teaching of reading? Better yet, do I apply my understanding of the nature of comprehension.

Therefore, it behooves each of us to build our own model of the intellectual processes employed by a reader as he approximates the meaning intended by the author. Our definitions of reading have urgent and profound implications in regard to the manner in which we teach reading and what we teach.

As a matrix upon which each teacher can build her own model of intellectual processes employed by readers as they approximate the meaning intended by gifted authors, the following definition is offered:

> Reading is the cognitive act of perceiving and ordering the reader's immediate environment. It is a psychomotor activity.

Permit the writer to return to the part that he is to play in the discussion of comprehension, specifically to serve as a pro-challenger supporting the contention that we are applying what we know about comprehension. Referring to the preceding paper by Edmund Henderson, while not agreeing with him in all respects, generally speaking the writer finds that he can support a few of the positions taken and still remain intellectually honest.

In contrasting the behaviorist and the cognitive view of learning and language, Henderson has identified some methodologies or approaches to beginning reading instruction and, furthermore, has indicated under which view of learning each method or approach on face value would fall.

He claims that the most representative of behaviorism is the so-called programed-reader approach, which is a direct application of Skinner's principles of conditioning. Closely allied to this is the IPI in reading which is being field-tested in several educational communities in the United States. A little further along the continuum ranging from behaviorism to cognition is the ubiquitous basal reader, which according to Henderson was conceived within the framework of Pavlovian psychology.

Of the first, i.e., programed material, the writer would wholeheartedly support Henderson. In this material, the programers have identified behavioral objectives necessary to the attainment of a prescribed performance. These behavioral outcomes are sequenced, and the reader has ample opportunity for successfully producing the desired response and reinforcing it so that all will sum to the prescribed performance. Herein lies a limitation, and it is the degree of precision with which each frame is structured. For developing vocabulary and related word recognition skills, the programed material would seem adequate. However, the proof of the pudding in any reading program is the degree with which a reader approximates the meaning intended by the author. A behavioristic point of view would fall short in explaining and identifying the intellectual process employed as the reader establishes rapport with an author.

The ubiquitous basal reader has been maligned by its enemies. The critics claim that the language patterns do not parallel the normal oral language patterns of beginning first graders, that the vocabulary is too strictly controlled, that the material in the teacher's manual is too highly structured, that the basal program as a whole does not provide for individual differences, and that it is conceived upon a mechanistic theory of learning. This last point is open to debate. If a teacher's concept of comprehension is nothing more than the ability of the reader to parrot what the author has said, with little interpretation, we could conclude with a high degree of confidence that teachers are employing what they know about comprehension. If they have in their own minds built a construct of the thinking processes employed as readers establish rapport with an author, we could say again that the materials contained in the basal reader lend themselves to the cognitive view of learning. But to dub the reading materials contained in the basal reader as falling within the framework of the behaviorist realm of learning is, metaphorically speaking, placing our educational necks in a most precarious position. The writer has seen, and probably each reader has seen, reading lessons taught in a manner that runs the complete gamut.

Henderson postulated that most language experience approaches are conceived within the framework of the cognitive view of learning, rather than upon a mechanistic view. Such a postulate can be sustained without difficulty. He buttresses this postulate with the statement that the language experience approach implies that a detailed analysis of the thinking skills have been made. Again, the crux of the matter lies within the teacher's awareness, knowledge, and understanding of the intellectual activities employed by the child. Comprehension is not necessarily the mastery of content, but rather using content to improve language skills as well as to refine thinking skills. If we accept the premise that thinking is symbolic in nature and that the language experience approach is based upon the repertoire of language patterns the child brings to the learning situation, it can be concluded with a high degree of confidence that this approach was conceived within the realm of cognitive psychology.

The irritating question still looms on the educational horizon: "Do I, personally, apply what I know about comprehension?" If each teacher can answer the following questions affirmatively, he can rest his case similarly:

1. Am I conversant with the different theories of the structure of the intellect, such as Guilford's?
2. Can I offer an acceptable definition of the thinking process?
3. Am I conversant with the modes of thinking as defined by David H. Russell?
4. Do I know how the materials affect thinking?
5. Do I believe that thinking is symbolic in nature?
6. Am I familiar with divergent production and convergent production as defined by Guilford?
7. Do I teach inductively?
8. Do I help students establish purposes in reading?
9. Have I an understanding of the nature of the English language?
10. Last, and most important, have I built a construct of the complex mentalistic process of comprehension?

Henderson's paper is challenging—challenging in that we (the rank and file of teachers) must answer the two subquestions: What do we know? and Do we apply this knowledge? Each teacher must answer these questions personally.

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Con-Challenger: HELEN L. WARDEBERG
Cornell University

NO is the obvious and quick answer to the question "Do we apply what we know about comprehension?" Always, a lag exists between what is known in the laboratory, at the *ivory tower* level, and what is done in practice. Paul Mort estimated a fifty-year interval for adoption of administrative practices and innovative features in education. This amount is probably an exaggeration. Certainly today information moves more rapidly, and change is the order of our lives. But still—even in medicine and similar fields—a substantial lag exists between knowledge and practice.

In a sense then to a rhetorical question, a rhetorical answer is *No.* Even with the best of intentions, best materials, and best trained teachers, we would probably not literally be applying all that we know about comprehension.

In considering the question further the writer asks, Who is *we?* Teachers who instruct? Writers who prepare materials of instruction: Readers who use printed materials?

Do we as individual teachers apply everything we know we could do, if we really take time and put our minds to it? Undoubtedly we do not. Anyone who writes material feels that with more time or another approach, he could have done better —and surely will, next time. We, as writers, never really apply all we know about making material comprehensible. As a reader, the writer knows quite a bit more about comprehension than she takes time or effort to apply. None of us, then, probably really applies *all* that he knows about anything. Thus, again a rhetorical answer to this rhetorical question is *no.*

In "Peanuts" recently, Charlie Brown remarks that "Even a stupid question deserves an answer." In this sense one might consider this a stupid question because it is clear we never can or do apply all of what we know about anything, anytime, any place.

Assuming, however, that this is not a stupid question with a simplistic answer, its implications merit serious consideration. Empirical evidence reinforces the question whether we do apply what we know about comprehension. College teachers speak of students who *can't read*, at least adequately to meet demands of college courses. High school teachers say—as do upper grade teachers—that pupils cannot read math, or social studies, or science books. Yet, primary teachers tell us—and test records and performance support this—that almost all children do *learn to read*, in the sense of "cracking the code" and decoding symbol/sound correspondence. The first grade studies project clearly shows almost all children learn to read in this sense in the primary grades.

Somewhere, however, the sequence seems to break down. The steady growth that ought to show up does not. Children who start out successfully end up without adequate competence to meet the reading tasks demanded in the middle grades, high school, college. Remedial reading teachers report that a common pattern they see is normal progress in the primary, a gradual falling behind in middle grades, and trouble in the junior high. This phenomenon is too frequent and too pervasive to dismiss with the truisms that college professors are unreasonable, standards in the high school are unrealistic, or "teachers don't teach reading in middle grades."

All of us know the functional illiterates, those who can decode words and even recall an idea—but who, as kids say, "don't get it." Many youngsters do not like to read. Many adults do everything they can to avoid reading. Nonreaders still constitute a high proportion of the population. Individuals in all of these classifications apparently get little, if any, satisfaction, pleasure, or indeed little of anything from reading. Perhaps these are inadequate *comprehenders*, for whom what is known of comprehension does not apply.

Further disquieting evidence comes from the popularity of the speed reading courses, the moneymaking operations that capitalize on the "fact" that we apparently do not apply what we know about comprehension. People who take these courses can read, at least in the decoding sense. Their concern lies primarily with effective comprehension at a reasonably adequate rate.

This type of empirical evidence lends support to the *con* side of the question: Do We Apply What We Know About Comprehension? It is easy to be critical, to be con. It is easy to wail that teachers do not do what they are supposed to do, for there is always some truth in this complaint. But this attitude does not get us anywhere. There is a more fundamental issues to this particular question. We do not yet have working models of the comprehension process. Bits and pieces of information about the nature of comprehension are added to the hunches and the intuitions of good readers who can describe what they do when they comprehend the printed page. But this knowledge is largely without structure. If S-R is indeed a basic model, even that has rarely been explicated as Henderson does it in his paper. We need such models based not only on learning theory but other rationale as well. It may be a long time until a truly comprehensive and workable model is developed. In the meantime, each of us can work on ways to show the interrelatedness of the various elements of comprehension as they are identified in the linguistic domain, in the cognitive domain, in the literary domain, and perhaps in others.

Much emphasis has been placed and money has been spent on studies of initial instruction designed to show that one or the other decoding process is more or less successful; little is spent on research regarding comprehension. Decoding is the relatively mechanical part of reading, easy to analyze, to segment, to test. Most people readily admit that this skill alone does not assure reading and that comprehension is important. Yet, ways to research this component are not well developed. Answers will probably not lend themselves easily to computers and programing or to the clear-cut statistical type interpretations desired by many researchers. Yet, the need for some sort of synthesized system wherein the various elements can be structured in our teaching, as they must be integrated in the mind of the reader, is apparent.

We subsume many skills, attributes, and interests under the rubric of comprehension: linguistic analysis, cognitive skills, perception, creativity, vocabulary, literary criticism, detecting propaganda. Sometimes it seems we try to apply more than we, in fact, know about comprehension. And the result is a shotgun barrage that hopefully hits someone, sometime, somewhere. We may need to *delimit* comprehension, as we order and structure it for teaching purposes.

We tend to equate comprehension with remembering, with organizing and outlining, with inferring beyond what the author says, and with being critical, appreciative, and so on. These are all desirable outcomes, but are they comprehension? Kerfoot talked several years ago at IRA on the topic "Comprehending Comprehension." We are still not agreed on an operational definition without which it is not likely that we apply what we know about comprehension.

Scholars in various supporting disciplines currently are trying to describe the process of comprehension in terms of their own frame of reference. Linguists explain the relation of words and word parts to meaning, sentence form and structure, sentence variations, and relationship of paragraphs. Word parts, vocabulary meaning, structural elements, all have long been taught in reading; but we probably cannot assume this work contributes to comprehension directly. Sometimes we operate as if the process of reading were the same as the goal of comprehension. We teach the main idea or topic sentence as a skill, for example, often independent of the cognitive process and without evidence of difficulty in sequencing. Psychologists clearly show that the structure of the intellect and nature of thinking are basic to comprehension. Perhaps, as Stroud postulates, comprehension is *not* limited to nor is it even specific to reading. Comprehension may develop as the mind develops whether via listening, reading, or any other communication media.

While the writer's function was to be that of con-challenger, it seems that there is really little argument among the three of us. We agree on the need for better delineation of the meaning of comprehension and the desirability of models to guide instruction. We agree that all of us can do better, for none of us—teachers, writers, readers—ever really apply all that we know.

The skill sequence used in teaching reading in early America was as follows: learning the alphabet, learning syllables in the syllabarium, and using a primer in which pupils named the letters and spelled the words until they could pronounce them by sight. In the years that have elapsed, reading skill sequences have been expanded, extended, and varied. Until recently, however, the consensus seems to have been that some kind of sequence was necessary. There are people at the present time, however, who believe that a skill sequence is not important. There are others who are staunch in their belief that one particular sequence is better than any of the others. The discussions that follow are directed to this issue.

Sequence of Reading Skills in Reading: Is There Really One?

Ira E. Aaron
University of Georgia

HOW IMPORTANT is sequence of reading skills in reading? Is there really *a* sequence—or should there be? Will one sequence work as well as another? These are a few of the questions that professional educators are beginning to ask. For years most writers and speakers on the teaching of reading have given the impression that sequence in reading skill instruction is an absolute necessity. They have proceeded, further, to present *the* skill sequence for reading instruction.

Sequential skills programs of many kinds are available today. These programs certainly are not the same; still, one of their major ingredients is a sequential arrangement for skill instruction. Easy skills usually are introduced before the more difficult skills, and vocabularies often are controlled. Some of these programs emphasize meaning from the beginning, whereas others advocate beginning with the code. Some favor rigid vocabulary control, whereas others have very little control. Some start with consonant sounds first; some, with vowel sounds first. All of these programs advocate some kind of sequence but not the same one.

A look at research and opinion on this topic is long overdue.

This discussion is not likely to answer many questions about sequence, but it will have served its purpose if it encourages a few persons to probe for some of the answers to questions about this topic.

Organization of this paper

This paper will be devoted to a review of selected parts of the literature on sequence in reading skill instruction. First, samples of opinions will be presented. Then attention will be turned to recent related research studies.

Research germane to the topic of sequence includes studies dealing with the following:

1. Pretraining in perception for reading.
2. Hierarchical arrangement of reading skills.
3. Comparisons of suggested sequences of different basal series.
4. Code versus meaning emphasis in beginning reading.
5. Relative effectiveness of methods involving sequential development.

Selected studies in these five areas will be reviewed. At times, critical evaluations will be made of the investigations cited. The purpose of this paper is to review the literature as objectively as possible, with no final conclusions or evaluations. The two presentations following will debate the issues.

Several other related areas of research, such as learning modality and programed learning, were omitted in this review because of space limitations.

In reviewing the literature, only the more recent references are cited. Among the investigations reviewed are a number of the studies included in the twenty-seven that made up the Cooperative Research Program in Primary Reading Instruction. These studies, like most methods studies, suffer from some of the shortcomings of classroom research. They still offer information of value to the topic under discussion.

Opinions about sequence

Almost everyone has an opinion about sequence—and insists on expressing it. The lack of definitive research has not deterred professional educators and the lay public alike from making positive statements and recommendations.

When one picks up professional books and articles on the teaching of reading, the conclusion can be drawn easily that sequence in skill instruction is a "must." Rarely does the reader find a statement questioning the idea that sequence is necessary.

"Sequential Aspects of Reading Development" is the title of a chapter in a book by Strang, McCullough, and Traxler (*46*). The chapter title itself implies that the authors believe that there is a sequence in learning the skills of reading. One of these same authors, Strang (*45*), in her book on *Diagnostic Teaching of Reading*, emphasizes the importance of locating the child's present developmental stage in appraising his reading achievement. She adds, "Instruction starts from there and is guided by the teacher's knowledge of a psychological sequence of reading skills."

The 1960 reading conference at the University of Chicago had "Sequential Development of Reading Abilities" as its major theme (*32*). Approximately fifty speakers on this topic at least gave the impression that reading abilities develop sequentially. Tyler (*48*), in speaking about the importance of sequence, listed three contributions of sequence to effective learning. One of these incorporated the developmental aspect of learning—namely, that a new learning task builds on and grows out of an earlier learning situation.

According to Russell (*35*), ". . . most children go through the same patterns of development with an orderly emergence of reading abilities." He also states that persons who prepare basal readers ". . . have general sequential patterns to follow in the content of materials and in the teaching and learning methods advocated."

Others who have indicated that sequence is important include Smith (*41*); Gray (*13*); Witty, Freeland, and Grotberg (*52*); and, from the field of psychology, Bruner (*6*). These are just a few of the supporters of sequential instruction of skills.

A few writers question the importance of sequence. Veatch (*49*), perhaps the strongest advocate of individualized reading, states that ordering skills in sequences as in basal reader guidebooks is unnecessary and misleading. She contends that each child has his own sequence for learning and that it is the "sequence" that should be followed. The language experience approach advocates would also put less emphasis on sequence. Lee and Allen (*23*), in contrasting the language experience approach with other patterns, characterize the language experience approach as being an open type of instruction in which all the language arts are combined. They refer to sequence, but in very broad terms.

Miel (*26*), in a thought-provoking article, questioned the blind belief in *a* sequence. She concluded by stressing that sequence in learning is a reality and that it must be adapted to the individual child when appropriate for him.

A recent yearbook of the National Society for the Study of Education, *Innovation and Change in Reading Instruction* (*31*), raises the question of sequence in at least four chapters. As an example, Wittick stated:

> Of special interest is the fact that little research has been done to determine the most effective learning sequences, regardless of the method used. Sequences have been produced logically rather than psychologically. . . . Certain methods may be found more effective than others chiefly because the sequence is better programed or better suited to the way children learn.

A review of opinions on sequence would be incomplete if it omitted Chall (*7*). She, of course, advocates sequence—and a special one that places primary emphasis on the decoding of words.

An analysis of the statements attributed to the various authors would reveal, for the most part, that they all lean toward the belief that there is sequence in learning the reading skills, but they certainly would not all agree on what that sequence is. A few lean toward multiple sequences, and at least two play down the importance of sequence in learning reading skills.

Studies on perceptual pretraining

One type of research related to this topic is the effect of perceptual pretraining upon learning to read. A few studies of this type will be reviewed here.

Three studies of visual discrimination by Muehl relate to the question of sequence in reading skill instruction. His first investigation (*28*), involving 37 kindergarten children, concluded that learning a list of words was aided by visual discrimination pretraining in which the same words were used. Pretraining with different words or with geometric forms was less effective.

Muehl's second study (*29*), this time with 60 children, revealed that the subjects used specific letter differences rather than shape differences to discriminate among words of similar length but different shape. He also noted that children given pretraining with letters only learned more rapidly in pretraining than those given training with nonsense words of relevant and irrelevant shapes in which the same letters were used. He reported that all three groups performed the same in later task learning. His study tends to support the provision of visual discrimination training with letters later to be taught in words. This approach would make the learning task easier, since recognizing letters in words is more difficult than recognizing individual letters.

Muehl's third study (*27*) investigated the facilitating effect of knowledge of letter names in learning to read words on a list. This study involved 87 subjects. One group learned the names of three letters that were later used as the critical stimuli in learning nonsense words paired with pictures of familiar things. Another group learned names for letters that were not used in the nonsense words taught later. The researcher found that the second group, the one taught the irrelevant letters, learned more rapidly than the "relevant letter" group.

Muehl's studies were limited to 184 Iowa kindergarten children. He gave very little information in his three studies about the backgrounds of the children. Are they typical of children in other parts of the country? Or even in other sections of Iowa? This information cannot be determined from the data given.

Muehl's first study was supported by the results of an investigation of Staats, Staats and Schutz (*42*). This time 36 Arizona children from two kindergartens were the subjects. As in

Muehl's study, the researchers found that visual discrimination pretraining with words to be taught later has a facilitating effect.

Another study of perceptual pretraining is that of Gorelick (*12*). Her 69 subjects, beginning first graders in Los Angeles, were subdivided into three equated groups. By means of an autoinstructional device, one group received visual discrimination training involving abstract symbols while a second group received visual discrimination training involving meaningful symbols. The third group, the control, was given no pretraining. All three groups were later taught with the same word recognition program. The group without training achieved as well as the other two groups. This finding may have been related to the kind of symbols used. Abstract symbols were drawings shaped like the words, whereas meaningful symbols were pictures illustrating words.

Other studies of this type are available. They investigate very narrow aspects of the problem and throw very little light on the subject. Some of the studies involve very few subjects. and sometimes even these are not described.

What can be concluded from these studies? Visual discrimination of words seems to have a facilitating effect on learning to read these same words. The conclusion that much more research is needed can also be drawn.

A review of research on visual discrimination and reading has been presented by Barrett (*1*); and a review on auditory discrimination and reading, by Dykstra (*8*). They give very little help on the question of sequence.

Hierarchical arrangement of reading skills

Another type of investigation that touches on this question is the study of the extent to which skills arranged logically, from simple to complex, agree with children's learning of these skills. Someone, on the basis of logic, arranges a group of related skills from simple to complex. Children are then tested on these skills. If the children show that they know more about the skills on the "easy" end of the hierarchy and less about those on the "hard" end, then it is concluded that the logical arrangement is compatible with children's actual learning of these skills. What these studies do not tell, however, is whether some other arrangement might work as well.

Blake, Aaron, and Westbrook (2), as a part of a larger study, arranged selected subskills in sequence on the basis of expected level of complexity and then tested the extent to which this logically arranged sequence agreed with the degrees of difficulty of the skills when actually tried out with children. Subjects for this study were 639 children who were reading at the beginning of the year at grade two through grade five level, as determined by an informal reading inventory.

The logically arranged sequences were found to agree fairly closely with the results found in testing. The expected order in structural analysis skills, for example, was the following: identifying components of compounds; identifying roots, endings, and suffixes; identifying roots and prefixes; identifying roots and multiple affixes; locating roots by using root change rules; and changing roots by using root change rules. The results of this study merely indicate that these subskills, as arranged on the basis of logic, agree with what actually was found. They do not, however, furnish evidence that this is the only arrangement that could have been used.

Sequences of different basal series

All basal series of readers suggest skill sequences for teachers to follow in the teaching of skills. Many of them may be similar in part; no two, however, are the same. Some series of readers start with the building of a small stock of sight words before much is done about teaching word attack whereas others begin with the "code." Most basal reader series teach sound-letter association by beginning with common consonants. Others, however, begin with vowel sounds. Some series emphasize an analytic approach to word attack in which the whole word is presented first and then the parts are analyzed to the extent that analysis is necessary for recognition or identification. Other series use a synthetic approach. These approaches start with the parts and then put the pieces together to form the whole.

Certain of the basal skills are sequenced alike from series to series because of the close relationship of the skills cluster. In other words, the growth or learning of these skills is developmental. An example is the learning of the final *e* phonics generalization. The teaching of this principle, whether it is taught inductively or deductively, involves knowledge of the following: "silentness" of letters, names of letters, and long vowel sounds. Knowing these facts about sound-symbol relationship is a prerequisite for learning the generalization. But do these need to be taught always in a given order? For example, must the long vowel sound be learned before "silentness" of letters? Or does either pattern work equally well? Insofar as can be ascertained, no specific studies have focused on this particular sequence problem.

These examples are just a few of the many differences from series to series. Even the series that are considered to be very similar differ considerably in skill placement. Some series are quite different. Yet, children using all of these varied approaches learn to read, and occasionally some fail. Do those who succeed learn equally well? Current research data do not answer this question.

Code versus meaning studies

Under the label of "code versus meaning," several different kinds of studies may be grouped. These include comparisons of intensive versus gradual phonics, linguistic versus regular basal programs, initial teaching alphabet versus regular basal programs, and synthetic versus analytic approaches. Some studies, of course, cut across approaches. In terms of skill sequence in reading, this review will focus on selected studies in terms of whether there is an indication for an early emphasis upon the code.

Instead of attempting to present a compilation of research studies in each of these subareas, very brief descriptions of and conclusions from two reviews will be cited. Then the pertinent First Grade Studies* and one additional study will be cited.

Intensive phonics versus gradual phonics. Gurren and

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*The term "First Grade Studies" which is used frequently in the remainder of this paper refers to the findings of twenty-seven first grade reading studies sponsored by the United States Office of Education.

Hughes (*14*) reviewed 22 studies dealing with comparisons of intensive and gradual phonics groups. Studies were divided into those meeting selected statistical criteria and those with little control, according to the judgment of the authors of the review. They reported that 19 studies found significant differences favoring intensive phonics; three found neither approach favored while no study favored gradual phonics. Gurren and Hughes appear to have classified as rigorous studies those that support their own viewpoint. Despite this criticism, one may conclude that the majority of the evidence from the cited studies favors intensive phonics.

The review by Chall (*7*) includes a summary of experiments bearing on "look-say versus phonics," systematic versus intrinsic phonics, linguistic approaches, and modified alphabet approaches. Among many other conclusions Chall states: "A code emphasis tends to produce better overall reading achievement by the beginning of fourth grade than a meaning emphasis." Chall opens her discussion of research by stating that the reviewer can make research prove almost anything he wants it to prove. She also states that reading research is inconclusive, and then she proceeds to draw conclusions.

Twelve of the First Grade Studies investigated relative effectiveness of supplementary phonics, initial teaching alphabet, or linguistic approaches. In most instances, these studies compared a regular basal approach with one or more other approaches. The basals used, however, varied considerably from study to study.

Studies by Bordeaux and Shope (*5*), Harris and Serwer (*17*), Murphy (*30*), Tanyzer and Alpert (*47*), and Wyatt (*53*) had intensive phonics as one aspect. The Harris and Serwer (*18*) and Tanyzer studies were continued beyond the first year. The findings of basal versus basal with supplementary phonics, according to Bond and Dykstra (*4*), showed the basal with supplementary phonics to be significantly better than the basal alone. These findings were based on analyses of the data from all related studies.

Another related investigation was that conducted by Bliesmer and Yarborough (*3*). This highly publicized study compared ten different beginning first grade reading programs. Methods were categorized into analytic and synthetic approaches, with five methods falling into each classification. As the researchers point out, these categories are open to criticism since no method is completely synthetic or analytic. When these two groups were compared on subtests of the Stanford Achievement Test, approximately three-fourths of the cases (92 of 125) revealed significantly higher means for the synthetic methods. The usual criticisms of method studies apply to the Bliesmer and Yarborough investigation.

Initial teaching alphabet versus basal readers. Five of the First Grade Studies compare Initial Teaching Alphabet with basal approaches. These were studies by Fry (*10*), Hahn (*15*), Hayes (*19*), Mazurkiewicz (*24*), and Tanyzer and Alpert (*47*). All studies also followed the subjects through a second year (*11, 16, 20, 25*). The Initial Teaching Alphabet materials varied in that one study used Downing materials whereas the other studies used those of Mazurkiewicz and Tanyzer. Basal readers used were not the same throughout these studies.

When all studies comparing the Initial Teaching Alphabet groups with basals were combined, the i.t.a. groups, at the end of grade one, in general, were better on word attack whereas the basal groups were better on paragraph meaning (*4*). At the end of grade two, the i.t.a. subjects were superior on word attack and on spelling. The two groups were equal in other respects (*9*).

Linguistic versus basals readers. Four of the First Grade Studies were concerned with the comparison of some type of linguistic program with basal programs. These were studies by Hayes (*19, 20*), Ruddell (*33, 34*), Schneyer (*37, 38*), and Sheldon (*39, 40*). In their final report of the First Grade Studies Bond and Dykstra (*4*) stated that on the linguistic versus basal comparisons at the end of grade one, the linguistic groups had a tendency to out perform the basal groups on word recognition but that the basal groups showed greater speed and accuracy in reading. Where the phonic linguistic approach was used, it was superior on most subtests. At the end of grade two, the main change was that the basal subjects were better on word study skills.

Summarizing code versus meaning studies. The findings of the majority of the recent studies lean toward an early emphasis upon letter sound association as the better producer of reading achievement test results, especially on word recognition. The research studies certainly are not flawless. For example, the First Grade Studies had little control of materials within the various categories. Teacher differences were not controlled, and new approaches were likely to generate more interest and effort than the familiar approaches. Efforts, however, were made in many of the studies to limit the Hawthorne effect.

Two questions need to be raised. If intensive phonics actually is more effective—and a definite conclusion cannot be drawn from the present data though the evidence points in that direction—is sequence in the narrow sense of which letter or skill comes first a major factor? Which is the more important—early emphasis upon the code or organization and systematic instruction?

Individualized versus basal approach

Another area of reading research that may help to answer the question concerning the necessity of sequence in reading instruction is that area dealing with basal reading series versus individualized reading instruction. If classes using basal series classes consistently outperform individualized classes, the sequence found in the basal readers may be one of the causes. On the other hand, if the two methods usually show no differences, then sequence may not be important.

Sartain (36) presented a 74-item bibliography on individualized reading and reviewed the literature. Most research studies, as Sartain points out, were of the action research types, and even these were limited in number. Most of the studies he reviewed concluded that the two approaches showed no significant differences in reading achievement. Some of the teachers were very enthusiastic about the individualized reading approach, and some stated that interest was higher with this approach. Evidence to support the conclusions often was lacking.

Though studies comparing basal reader and individualized reading approaches are sometimes contradictory, many of the studies show no difference in reading achievement. Does this outcome mean that sequence is not important? Or could the individualized reading approach also have sequence—a sequence existing in the mind of the teacher? This latter is a question that cannot be answered at present.

Language experience approach versus basal approach

Investigations involving comparisons of language experience approaches have potential for shedding light upon the topic under investigation. As in most discussions of methods, opinions are much more prevalent than reports of research. What researchers label "language experience approach" varies considerably from study to study, but in all patterns there is considerably less emphasis placed on skill sequence in reading instruction than in programs using basal readers. If children in the language experience approaches equal or surpass children in the basal programs, then the belief that sequence is not important would be supported.

Six of the twenty-seven First Grade Studies used some type of language experience approach, and four are pertinent to sequence in skill instruction. A regular basal approach was compared with a language experience approach in various studies (*15, 21, 43, 50*). They were continued through a second year (*16, 22, 44, 51*). Summarizing all of the basal reader versus language experience comparisons in the First Grade Studies, Bond and Dykstra (*4*) pointed out that very few significant differences were found and that when they were found, they usually favored the language experience approach. They added that, in general, differences found were not of much practical significance. Dykstra (*9*), in summing up the second year studies, stated that the two groups were about the same in reading achievement.

In summary

An attempt has been made to review a selected number of recent studies and some opinions about sequence in reading skill instruction. The purpose of this presentation was to set the stage for a discussion of the issues. Most studies cited were not designed to reveal information on the topic under consideration. The major conclusion that can be drawn from this paper is that very few studies have really tackled the topic under discussion—"Sequence of Reading Skills in Reading: Is There Really One?"

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Pro-Challenger: **ARTHUR W. HEILMAN**

Pennsylvania State University

IN CONSIDERING THE QUESTION "What might one say as a pro-challenger in discussing the issue of skill sequence?" the writer concluded that both pro and con arguments should arrive at somewhat the same conclusion.

In the first place, the issue of sequence in reading instruction should not be debated on an either/or basis. It is highly doubtful that there is *one* sequence that merits an all out defense. More likely there are a series of short-term goals which can be attained more readily if some thought is given to logical presentation.

We talk a great deal about differences in learners; and it would seem that if we become enamored of one particular sequence for teaching skills, fact, processes, and the like, we are in essence negating the importance we allegedly ascribe to individual differences among children. On the other hand, a day to day instructional program that gives no thought whatsoever to sequence could well result in chaos.

Learning to read is a long-term developmental process. Any sequence for teaching skills, habits, and attitudes should be based on this fact. We should suspect any sequence that helps us achieve an immediate goal but which interferes with growth tomorrow. Reading—and specifically code cracking—illustrates this danger.

Learning the reading process has been a traumatic experience for many children primarily because instructional practices have always been based on an either/or sequence. In the 1890's, code cracking emphasis—in the absence of providing a "set" that reading is a meaning-making process—produced a type of reader we did not want to produce. This practice was followed by a complete swing of the pendulum to instruction which sought to teach the child to read whole words and neglect letter-sound associations. Today we are again invited to make code cracking *the first step in reading instruction.*

Becoming addicted to sequence (code cracking first or meaning first) has been instrumental in preventing us from teaching reading as a unitary process. There are three major skills which must be learned *concomitantly* since they complement one another. These are learning sight words, associating printed letters with speech sounds, and profiting from context clues. Every facile reader makes progress on all of these fronts during his early career as a reader. If we give him a "set" to overrely on any one of these skills to the exclusion of the others, we hinder his growth on the long-term developmental basis.

On the other hand, there are many clusters of skills which demand a sequential teaching. Obvious examples include dictionary usage and study skills, such as effective use of a book (table of contents, index, glossary), locating information, and library usage. Teaching phonics or letter-sound-associations demands some sequence but perhaps not *a* sequence or *the* sequence. It is possible, but not desirable, to make a fetish out of sequence. While one might feel justified in advocating the teaching of consonant sounds prior to vowel sounds, there is less case for prescribing a precise order in which consonant sounds should be introduced. This conclusion, in turn, would not imply that all possible sequences of teaching consonant sounds are equally defensible. Few teachers would advocate that instruction begin with teachings—such as, *ph* is sounded as *f; c* is sounded as *s; k* is silent in *kn; ch* is sounded as *k;* and the like.

Con-Challenger: Emery P. Bliesmer
Pennsylvania State University

FOR SOME TIME this *con* writer has been making notes of points or ideas concerning a con position with regard to sequence of reading skills (points and ideas obtained through reading, discussion, and reflection). As Aaron pointed out in his main presentation, research bearing directly and specifically on the topic, "Sequence of Reading Skills," is noticeably lacking, despite frequent and typical claims and implications by authors and publishers that programs and materials developed and made readily available are based on "latest research findings" concerning learning, child development, and what-have-you (frequently without citation of or reference to specific research studies or findings). As was also indicated by Aaron, and by Heilman in his pro discussion, it is difficult to stick consistently to a definite pro or con position. Preparations for the present article were made with full realization of the possibility that by the time the con side was presented many of the planned points or arguments would already have been covered, thus leaving the con writer with little left to present. The following, then, is the result of attempts to pull together a number of points, questions, and observations relative to a con position on sequence.

Learning principles or rules (which, if either, first?)

The majority of authorities in reading have generally advocated and stressed learning principles of word attack before, or instead of, learning rules; and this approach has usually been reflected in the materials prepared by these people. In the area of word attack skill, it has usually been advocated that children should be led to generalize sound and structural clues on the basis of words or sounds already learned or known (*8, 10, 11*).

Many children have learned to read with teachers who supposedly adhere to this approach. However, we should recognize that a generalization is something that must come from the child or learner as the result of experiences (guided, self-directed, and vicarious) that he has had with words. The generalization is something the child has to formulate for himself; and eventually he has to verbalize, if the teacher is to know or to check upon whether the child has reached the point of generalization. When other children in a group or class hear this generalization expressed, their attention is partly directd to the words of the generalization. Focus thus tends to be on the words, which then become a "rule"; so despite supposed attempts to avoid teaching rules, a number of children will learn the "rules" anyway. Many of these children have been found to have mastered word attack skills.

Also, with some programs or systems rules are definitely taught directly (*9*). Many children have been found to learn to read successfully when exposed to this approach, also.

Vocabulary control

While there is some overlap in vocabulary among different basal reading series, this overlap is far from complete. This writer's own research for a period of seven years (*1*) yielded indications that when proceeding from one series to another, at the same level, about one-third of the total words met in the second series will be new, approximately one-third of those met in the first series will not be met in the second, and roughly two-thirds of the words will be common to both series. Although there is then a degree of overlap, the sequence in which words in typical basal reading series are introduced is relatively unique or peculiar to a given series. Since many children undoubtedly learn to read after being taught with, or exposed to, two or more different series, the specific sequence of words introduced is obviously not the determining factor.

In the typical "analytic" series, the sound elements taught and the sequence in which these are taught are determined in great part by the words which have already been introduced, not by any specially or universally unique sequence. Or, vice versa with a number of "synthetic" series or programs, words which children can get on their own are dependent, at least at early or lower level stages, on specific sounds or sound elements which have been introduced previously, not on a particularly or uniquely effective sequence of sounds.

Some of the individualized reading advocates (20) would do away with vocabulary control and structured sequential instruction. Results reported for a number of programs indicate that many children do not need the control and sequence imposed, at least not that imposed by the teacher. But do we not need to give some thought and recognition to the possibility that some type of control and sequence might quite well have been imposed intrinsically by the child or learner himself?

Perhaps we should concentrate more on *when,* rather than *if,* or at what point, vocabulary control is necessary and when it is no longer a problem. Durrell, for one, has referred on several occasions to findings in Boston University studies both to the effect that there is no such thing as vocabulary control after the primer level in first grade (*12*). It would also seem rather likely that if vocabulary control is still a major concern with retarded readers who are using second and third grade level books, they may be using the wrong, or too difficult books anyway.

Order of difficulty of sounds

There would seem to be, relative to teaching auditory discrimination and application of sounds, some sort of order of difficulty of sounds to be learned. For example, the order of presentation of sounds in *Building Word Power* (*6*), a book of auditory discrimination exercises which grew out of Helen Murphy's master's thesis at Boston University, reportedly was based on some research evidence with regard to the difficulty order of sounds. Later work in the area of auditory discrimination apparently indicated other and varying difficulty orders (*7, 12, 13*).

Auditory discrimination before phonics

There would also appear to be evidence that auditory discrimination is a very important prerequisite for phonics skill (applying visual-auditory association knowledge and skill in figuring out new or difficult words). Many who work to some extent in the area of clinical and remedial reading regard lack of auditory discrimination skill as one of the major and most frequent lacks among retarded readers. If a child does not have auditory discrimination skill, then he cannot readily make associations with visual discrimination (auditory-visual association). He will usually have trouble then or later in developing phonics skill.

Aaron has already cited Olson's study (*16*) as presenting evidence that children should master perceptual organization before progressing to auditory-visual association. But some children do seem to master phonics skill when the teacher ignores lack of auditory discrimination, i.e., teaches phonics lessons rather than auditory discrimination. It has been suggested that success reportedly attained through use of some programs, such as the Economy Company's *Phonetic Keys* (*9*), may be because children have been reviewed or drilled so frequently that they have had little chance of "missing the boat"; but we apparently do not have real evidence of this possibility.

It will be noticed that usually even the poorest speller gets the first letter of a word right, or at least phonetically right, although the rest of the spelling of the word may have little apparent relationship to the given word. Also, retarded readers lacking in auditory discrimination skill will frequently be able to identify the beginning letter of a word (or tell what letter it begins with) but not be able to give other words which begin with the same sound.

Stressing meaning from the start

Among reading specialists there has been long-standing and considerable stress on a meaning approach or on stressing meaning from the start, thus "placing comprehension foremost." When methods more strongly stressing sounds at or near the beginning of a program have been presented or advocated, criticisms or charges of sacrificing meaning have usually been given quickly.

Perhaps we should seriously question whether we really need to place comprehension first, ahead of decoding, or if we even need to place it concomitantly with "phonics" or decoding, which, as Chall points out, is questioned by a number of linguists (*5*: 34).

We might seriously raise the question of whether it is really possible to keep meaning from the typical beginner. Words he will be most likely to meet in his early reading are not usually ones which will pose a particular meaning problem for him. Meaning will not be very likely to interfere with his word recognition; usually it will be the other way around. This is relevant to Chall's "word recognition vs. word comprehension as a first objective" issue (*5*: 64-66).

As has also been pointed out previously (*14*), for several years before starting school the typical beginner will have been familiar with the concepts he will meet in the reading books for grades one through three in a typical basal reading series. Thus, the problem for the child is not one of developing meaning or acquiring concepts but, rather, one of recognizing the printed symbols for concepts already known (or one of word recognition).

Consonants or vowels first?

The majority of reading "experts" have usually advocated teaching consonant sounds before vowel sounds; and the lead of the late William S. Gray (*8*) has been followed in practice (at least in the bulk of the basal reading materials widely used for many years). The rationale for this plan actually seems to be based on logic, or reasoning, or common sense rather than on real research evidence.

A number of reading programs start with vowels and reportedly have been used with success in a number of school situations (*9*, *18*). At least one program involves beginning not only with vowel sounds but with long, rather than short, vowel sounds (*9*).

It may be of interest to note that in the "widely publicized" Bliesmer-Yarborough study (*2*), to which Aaron has made reference, one of the "most successful" synthetic programs begins with consonants and actually deemphasizes vowels considerably; one begins with vowels, and one uses a combination of vowels and consonants at the start.

The each-child-has-his-own sequence notion

The notion that "each child has his own sequence" is one strongly espoused by many "individualized reading" and "language experience" approach advocates, and probably by many others also. But to what extent is the child's "own sequence" a matter of what he has been exposed to, what he has been offered or been subjected to, or what he has *not* had as well as what he *has* had? To what extent can his environment—that is, learning in general, reading, and other influences—be manipulated to change or alter his sequence?

Perhaps, rather than a different sequence, it may be a matter of gaps in the sequence in different places—for example, consider auditory discrimination with respect to sounds in different positions in words, or single sound endings or rhyming endings, or direction orientation with respect to some but not other letter symbols.

How much might what the child has grasped or half-mastered at irregular places in the sequence have hindred his mastering a given or other sequences? For example, does the learning of beginning blends get in the way of learning initial consonant sounds? Does auditory discrimination or rhyming endings interfere with discriminating between endings? Does teaching visual and auditory discrimination together, before a child has mastered both separately, lead to confusion or present barriers to learning anditory discrimination? Does early stress on writing and spelling (which is visual) negatively influence development of auditory discrimination skill?

The difficulty with studying or comparing individualized approaches is that *individualized* refers to teachers as well as to children, a point which is seemingly not always recognized (at least in practice) by those who strongly advocate or espouse individualized reading. Is it not also a matter of each teacher having his own sequence?

Place of writing in conjunction with reading

What about writing taught in conjunction with reading or before or after teaching of reading has begun? Although often claimed to be coordinated or integrated with reading, writing is taught relatively apart from reading in many actual situations. Some programs are such that writing is more an integral part of those programs than it is of others, e.g., *Phonetic Keys* (*9*), Spaldings' *Writing Road to Reading* (*17*), i.t.a. (*15*), and Chandler's language experience approach (*4*).

As has been pointed out by Chall (*5*: *67*), "integration of language arts" is advocated by many experts; but efforts in practice are usually found to be directed toward or to result in coordination of only three—listening, speaking, and writing—with reading being dealt with separately.

It is interesting to note also that, while linguists have generally not stressed or advocated early writing with reading, programs prepared by some "linguists" and referred to at times as "linguistic approaches" involve much writing with reading from early stages, such as those prepared by Sullivan and his associates (*3*, *19*).

Sequence of comprehension skills

In teaching and helping children develop comprehension skills, teachers typically begin at a very simple or low level of recalling (or remembering or memorizing) simple facts. They then progress gradually to somewhat higher-level facts and to higher and more abstract levels of comprehension and understanding, such as, formulating main ideas, drawing conclusions, and summarizing in one's own words. Comprehension development has been treated as a matter of sequence or of hierarchical relationships among facts or ideas. In a way, there has been a tendency to impose a "level of comprehension" order on the learning reader, without much evidence to support the notion that teaching of comprehension skills to a youngster could not be started some place other than at the bottom of a hierarchy or pyramid of skills. This notion may need to be challenged or questioned.

Is enthusiasm or eagerness a positive or negative factor?

It is sometimes averred or implied that the enthusiasm of youngsters and/or teachers is what actually brings about the success of some approaches. Sometimes an almost "rabid" enthusiasm for a specific program or procedure is noted. This enthusiasm or eagerness usually is referred to as a "Hawthorne effect." As this writer pointed out in a paper at one of the research sessions of the IRA convention in 1967, perhaps we should do less viewing of this eagerness, enthusiasm, and excitement for a particular program or procedure as a negative factor and think more often about ways in which we might instill this factor in our teaching or in our pupils with other methods and approaches. Instead of trying so hard to explain why something we prize or value or hope for did *not* work as well as we wished or wanted it to do, perhaps we should consider more carefully *why* that which *did* work successfully was effective. Under these conditions receptiveness to the realization that what turned out best in a study, contrary to our expectations, might have been the most significant result.

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LIKE OTHER distributions of life, the disadvantaged have always been present and are found in all parts of the world. During the centuries of the past, concerns for providing better education for the people in this strata of society have been negligible. Recently, however, concern is being felt the world over, and in the United States it has developed into a major issue. It is appropriate that this volume should contain the following papers written by people who have had experience in attempts to meet the many problems attendant upon this issue.

Reading Instruction for the Disadvantaged: Is It Adequate?

HELENE M. LLOYD
New York City Schools

IS THE READING INSTRUCTION that we are providing the disadvantaged adequate? This question can be answered with an emphatic *no!*

Are we making any progress in our drive to have the disadvantaged learn to read? The answer is *yes;* there are definite bench marks that indicate areas in which progress is being made. However, at the present time, we are not providing the socially-economically disadvantaged of the nation with the reading ability needed to enable them to become self-supporting adults. Robert J. Havighurst (*1*) identifies the socially disadvantaged as follows:

1. They are at the bottom of American society in terms of income.
2. Many have a rural background.
3. They suffer from social and economic discrimination.
4. Although they are widely distributed in the United States, they cluster in the big cities.

In racial and ethnic terms, the children of the disadvantaged make up 20 percent of the child population of the nation and 40 to 70 percent of the children in the 20 largest cities. These children consist mainly of whites and Negroes from the rural South, Puerto Ricans who have migrated to a few great cities, and Mexicans and Spanish-Americans who have migrated into the Southwest and the Middle West. These are the children who have been denied the social experience that other children have, such as the following:

1. A family environment in which people read and in which there are a variety of toys, play materials of different colors and sizes, and objects that challenge the creativity of the child's hands and mind.
2. A family who talks together, answering the child's questions, encouraging him to ask questions, extending his vocabulary with new words, and giving him the opportunity to express an opinion.

The socially deprived and reading achievement

What impact has deprivation had on the progress of the disadvantaged in reading? Deutsch (2) states that by the time disadvantaged children reach junior high school, sixty percent are retarded one to four years in reading. He states that lack of appropriate language stimulation early in life, both at school and at home, may make success in reading as well as in other school activities progressively more difficult since the child becomes less and less responsive to remediation as he grows older.

A study by Barton (3) showed that in classes where children came from lower skilled, lower paid families, mean percentages of classes reading one or more years below actual grade level were 33 percent as contrasted with 6 percent among middle class families.

The study reported in 1963 by Walter Loban (4) showed that children who were low in general language ability were also low in reading ability. The gap between the high and low groups seemed to widen each year. His study found that writing and reading ability were related to socioeconomic position; those in the lowest socioeconomic groups were below average in writing and in reading achievement. At a news conference on November 1, 1967, superintendent of New York City schools, Bernard E. Donovan, made public the citywide reading test results for 1966-1967 (5). He said, "Despite evidence that pupils showed growth in reading during the last school year, the Board of Education, the professional staff, and I have serious concern that so many of our pupils who live in poverty still read below grade level." Repeating his concern about continued reading retardation in areas of poverty, the superintendent said, "The large-city school districts throughout the nation have not been able to teach reading effectively to disadvantaged children. Nevertheless, I pledge continued and intensified efforts of our teachers and our supervisors to bring all pupils up to the maximum of their potential."

What are the causes?

Why have the great cities throughout the nation not been able to teach reading effectively to disadvantaged children? The superintendent of schools in New York City has had reading improvement as his major objective for the past five years. Budget requests have been channeled to achieve this goal. There is no *one* reason but *many* reasons to be found in all big cities. Let us consider a few:

1. *The effect of inner-city life itself on the child.* A child of the slums is not part of the mainstream of American life. Someone has said such a child does not even bathe in its tributaries! He suffers from stimulus deprivation and environmental disadvantage. These are the negative factors that can destroy a child's motivation to achieve, especially in reading, the area of concern here.
2. *The impact of inadequate preparation of teachers and supervisors; preservice and inservice.* In most cases, our colleges and universities are not preparing teachers and supervisors adequately to work with the "new immigrants," as Rivlin calls the children who make up the bulk of the population in our great cities (6). In addition, school systems have not had the intensive, all out drive on teacher-supervisor improvement in the area of reading needed to effect change.
3. *The difficulties of teaching large size classes in a tight form of organization.* Studies by Deutsch show that some teachers in inner-city schools are spending as much as 80 percent of the school day on discipline and routine details, such as cookie funds,

reports, and the like. When are the children being taught to read?

4. *Lack of an extended developmental program in which corrective and clinical diagnosis and treatment of reading disability are important factors.* Why have we not provided a carefully planned sequential reading program, prekindergarten through adulthood, with corrective clinical services as needed? Is it because we fear that planning, structure, and sequence are characteristics that imply we are not innovative and are not using materials and approaches to meet children's needs?

5. *Lack of adequate parent-community involvement in the reading program.* We talk glibly of involvement, but our plans have not borne fruit. To date, parents, school volunteers, school aides, and members of the community have not played their full role in the reading improvement program in our schools.

6. *Lack of new tools for evaluation and lack of accountability for reading progress.* In how many of our schools servicing the disadvantaged, and especially those schools at the elementary level, is there an evaluation program that can withstand scrutiny? In how many of these schools do the principal and teachers know the reading progress of each child and, if that child is not making adequate progress, see that immediate action is taken?

What are the remedies?

Remedies to the ills just cited do not come in small or large size bottles or in quick, easy doses. These ills are complex and deepseated; they have already been with us too long for the sake of the disadvantaged children who are afflicted and for the welfare of society that bears the brunt of the nonreader in the shape of the school dropout and the illiterate adult, both of whom represent waste of human potential and end as drags on the nation's economy.

Let us consider what is being done in some big cities and what can be done to effect improvement.

Action one: Expand greatly the prekindergarten program with an adequate follow-through.

In New York City, 9,150 children enrolled in prekindergarten for the 1967-1968 school year. Last summer 24,000 were enrolled in the Head Start Program. These numbers are completely inadequate in light of the pressing needs of this great city enrolling 1,100,000 children. Lack of space is given as the answer. This is an answer we cannot and must not buy! Space must be found, just as space and money were found to build a world's fair, a new Madison Square sports arena, and other projects.

A prekindergarten program, with an adequate follow through program in the kindergarten and first grade, is needed to take advantage of the gains that come from early training at a time of maximum plasticity. It is needed also to serve as a bridge between the culture of the home in the inner city and the culture of the middle class school.

What program content will be most effective in helping the disadvantaged prekindergartener move ahead? The staff of our Bureau of Early Childhood Education, and Deutsch (7), who has headed a research study on the prekindergarten child over the past six years in New York City, believe that an effective program for the disadvantaged must highlight motivation, experiential background, mastery of language, and auditory and visual perception.

Consider the first, *motivation*. It is necessary that the young child should have confidence in his ability to learn and, later, *to learn to read*. It is clear that teachers, parents, and the disadvantaged child himself must recognize that the child *can* learn and —given instruction suitable to his needs—*will* learn to read as well as his more advantaged classmates. We must cast aside the false concept that disadvantaged children have a low ceiling of expectancy and replace the concept with a determination that the disadvantaged child can and will learn to read.

And now the second essential, *experiential background*. The disadvantaged child lacks ability to recognize English words and language patterns as symbols or sound-pictures of things and ideas. Because of his weakness in experiential background, we now know that he has difficulty in understanding the language of textbooks and of his teacher. It is in the prekindergarten that we work hard to build this experiential background and continue the planned, sequential building program in kindergarten, grade one, two, and so on.

The third essential, *mastery of language,* is one of the keys needed to unlock the world of reading for the child. Children should be exposed to the alphabet in the prekindergarten and work with letters in different forms. They should have *planned* opportunities to talk, talk, talk—to use a pair of working telephones or have a play telephone and a listening center.

The fourth essential is *auditory and visual perception.* Most times the disadvantaged child is likely to engage in marginal listening; that is, he may listen part of the time, then let his thoughts wander beyond the classroom. Research shows that elementary level pupils spend more than 50 percent of the school day listening to someone. The child from the inner city who lives in one or two crowded rooms has learned before he came to school to "tune out" his teacher.

How a child pronounces words reveals how he hears them, and how he hears them will later often determine how he will spell them and pronounce them in oral reading. It is important for the teacher, therefore, to provide for practice in acute auditory discrimination in order to detect pupils' initial errors so that mistakes are not reinforced through repeated incorrect usage.

From the viewpoint of visual perception, the urban slum offers the child a minimal range of stimuli. We know that among the skills necessary for reading are form discrimination and visual spatial organization. Children from depressed areas have not developed these requisite skills by the time they enter first grade and, consequently, are not ready for reading.

Thus, we need to take a hard look at what is being done in relation to disadvantaged children of prekindergarten age in order to move them into organized programs and, once so enrolled, to make certain that the programs are structured to insure maximum development in the skills basic to reading.

Action two: Plan with the staff a sequential developmental reading program for the school in which corrective clinical services are an important factor.

This action underscores that reading must, for most of our inner-city children, be taught throughout the child's entire school life, prekindergarten through grade 12, with a carefully planned network of services to meet the needs not only of the in school child but also of out of school poor readers and nonreaders. The needs of this latter group should and can be met through the establishment of a network of reading centers under the supervision of expert teachers of reading in schools, in libraries, in vacant stores, or in the community education centers just proposed in the latest "Statement of Policy and Proposed Action by the Regents of the University of the State of New York" (*8*).

This need for comprehensiveness implies also that all special reading services, whether for the advanced or retarded reader, must be regarded as a basic part of the school's developmental reading program. Corrective reading and clinical reading services must be made available to children in grades one and two so reasons for lack of advancement in reading readiness or reading can be diagnosed as early as possible and corrective teaching or other assistance provided. This year in New York City we are using Title I funds to work with private reading clinics in colleges, hospitals, and other private agencies in order to combine all the resources available in clinically diagnosing problems and in teaching teachers to deal with those problems which are within their scope.

This need for a long span system implies, in addition, that a sequential skill program for the full gamut from prekindergarten to grade 12 must be carefully developed. In New York City, we have recognized this aspect and have issued a new brochure entitled, "Sequential Levels of Reading Skills."

The need for a comprehensive reading program underscores that we must examine critically our programs in beginning reading. In so doing, we need to examine the findings of the twenty-seven first-grade reading studies sponsored by the U. S. Office of Education during 1964-1965 and the results of replication studies (*9*). For example, the CRAFT Study (*10*), conducted over the past few years in schools in poverty areas of New York

City under the direction of Albert J. Harris, includes nine major recommendations that merit attention in designing a beginning reading program of value to the disadvantaged. Let me comment on a few of the recommendations; the entire report merits your attention:

1. The major conclusion is that the teacher is far more important than the method.

2. The results of the study suggest the desirability of modifying the kindergarten programs for disadvantaged children in the direction of including sequentially planned activities for the development of specific aspects of reading readiness. Results suggest that children who show accelerated readiness may benefit from an earlier start in reading.

The article "Kindergarteners are Ready! Are We?" (*11*) merits reading.

3. The results have not shown a decisive advantage for any of the methods used in the study; i.e., Basal Reader; Phonovisual; Language Experience; Audiovisual.

Action three. Reduce class size and teaching range in order that each teacher has a teachable group. Set up new forms of organization for meeting the children's needs most effectively, as by grouping, team teaching, departmentalization, nongradedness, other. In the inner-city schools, teachers need the support that comes from working with their colleagues in order to meet children's reading needs.

Smaller class size increases the amount of time a teacher has to devote to each child. In New York City every kindergarten and first grade in all of the schools serving the disadvantaged now has a register of fiteen. Every second grade of a special service school, as we term them, has a register of 20. Can this practice of low registers be retained and extended to grade three? In light of budget cuts for next year, we do not know. However, we believe that, if the teachers receive training and if they are properly supervised, reduced registers over an extended period of time should yield results.

Action four: Design and implement new, imaginative, exten-

sive programs of preservice and inservice training for both teachers and supervisors. With this in mind, what is the job for our colleges, our board of education, and supervisors?

Let us start with the college first. Here are a few suggestions by the writer plus some made by Margaret Parke.

Our colleges need to

1. Evaluate more carefully what is happening in the teaching of reading in integrated methods courses and move toward meeting the demands for separate reading and language courses at the undergraduate level, if necessary.
2. Develop training courses that focus on having graduate or undergraduate students work with children, as traveling as a class by bus to a school as Durrell does in Boston.
3. Place student teachers as a team in a school in the inner city where the reading program is judged to be good.
4. Set up institutes or inservice courses for present principals and supervisors on the organization and supervision of reading and language programs for the disadvantaged.
5. Establish or improve the program for reading teachers and teachers of English as a second language at the master's level.

Our Boards of Education need to

1. Require every elementary and junior high school teacher to have a basic three-point course in the teaching of reading, in addition to a course in language arts. As Harris says in the report just cited, "Costly procedures such as smaller classes and provision of auxiliary personnel may continue to give disappointing results if teaching skills are not improved."
2. Establish a licensed position of Supervisor of Reading in the Language Arts to operate on a districtwide or area-wide basis.
3. Require principals and assistant principals to have at least one three-credit course in foundations of reading instruction and one in the organization and supervision of reading programs.
4. Provide a full time school day for every child.
5. Use television much more widely for inservice training of teachers and supervisors of reading.

Our principals and reading supervisors need to

1. Inventory the school's reading needs from the viewpoint of the children, staff, parents, community, materials, and equipment.

2. Develop with the staff a clearly defined program of developmental and corrective reading with proper supporting classroom materials and equipment. (The teacher should not waste valuable teaching time in locating adequate materials. Individual, creative teachers do and always will create many of their own materials, but not because a "Mother Hubbard" situation exists in the storeroom and library.)

3. Assume the responsibility for supervising the program or give this assignment to a responsible, well-trained person.

4. Establish a system for evaluating each child's needs and progress in reading. (This area involves informal and formal testing, analysis of results, and teaching to meet needs.)

5. Set up an inservice program in reading and in handling those routines that interfere with reading instruction. Help the new teacher to develop a wide range of teaching skills and styles.

6. Place responsibility for achieving results with the class teacher, but give her the support necessary to do an adequate job. (For example, Deutsch found in a study involving disadvantaged children that the teacher was devoting as much as 80 percent of the school day to disciplining and routines, such as, collecting milk money and handling reports. Even with the best teachers, this time never fell below 50 percent. The implications are extremely important and suggest that the disadvantaged child receives only one-half to one-third the exposure to learning that he should receive—and reading is an important part of that learning.)

7. Distribute pupils so that teachers have teachable classes. (Some teachers can work with a wide range of abilities; others cannot.)

8. Inventory a newcomer's reading needs before assigning him permanently to a class.

9. Place your strong teachers in the first, second, and third grades.

10. Coordinate the efforts of guidance personnel, corrective reading teachers, librarian, speech teacher, teacher aides, reading clinicians, psychologist, and other staff and agencies so that you have a team, not independent generals.

11. Plan with college personnel for the involvement in the school's reading program of teachers-in-training, including student teachers and graduate students.

12. Obtain special help for pupils in grades one and two not making progress, as from the corrective reading teacher or from the board of education's reading clinic or an outside clinical agency.

13. Develop a school volunteer reading program and, if necessary, a school volunteer conversational English program, in order to provide that one-to-one relationship so important to the disadvantaged child.

14. Involve parents in the reading program.

15. Set up a plan for the supervision of the reading program.

16. See that the teacher has books to use with children on the first day of school; arrange for the child to take home the reader or materials with which he is receiving instruction at intervals in order that parents can observe progress.

17. Keep the parents and the community informed as to the children's progress in reading. (Use innovative ways to do this, as 8 mm. films showing the school's reading program. These films can be shown in the local supermarket, in a storefront classroom, or in an out of doors read-a-thon.)

Action Five: Involve parents and community people in helping the disadvantaged to read better.

One of the exciting advances that we may attribute to Project Head Start is how much we have learned about the effectiveness of including parents, and, indeed, the whole community in the children's "head start." Recently reported research indicates that just having the parent read to a child for twenty minutes an evening when the child is two or three years old results in significant changes in the child's language abilities (*12*). Research on the prekindergarten project in New York City schools showed that the effectiveness of the work with children was directly related to the extent of parent involvement.

As we look at what has been done throughout the country to involve parents of disadvantaged children and members of the inner-city community in our reading-improvement programs, we have to admit that we have merely scratched the surface. In our city, some parents from disadvantaged areas are working as volunteers in the School Volunteer Reading Help Program of the board of education; some are serving as paid school aides and assisting by duplicating materials, distributing books, checking answers in workbooks, filling book orders, etc. We have not, however, involved parents of our disadvantaged to our satisfaction or to theirs.

This year, Title I money was earmarked by our city schools for use in developing innovative projects for getting parents involved in the reading program. Some projects suggested were workshops for parents in the home of one mother; or a reading club for mothers in a storefront, in a community center, in a room in a housing project; or exhibits with demonstrators involving "talking books," reading machines, tapes, and films of children at work for use in local restaurants, community houses and other locations where parents do come, stop, see, and, therefore, learn about a school's program of reading; or parent developed booklets in both Spanish and English that explain the reading program.

Have these new ideas been of value? We do not know as yet. There is one thing we do know, however: If they are not successful, we must continue to seek better ways for involving parents and the community in the school's reading program. No school can make progress alone!

The open sesame?

We know there are other actions to effect improvement in reading that can be taken in any city. For example, the writer has not touched on the whole area of materials for use with all disadvantaged children and the special approaches needed in working with non-English-speaking disadvantaged children.

I have underscored, however, five important areas for concentration:

1. Establish more prekindergarten classes with carefully planned programs of instruction.
2. Plan with the staff a sequential, developmental reading program, prekindergarten through adult classes, with special emphasis on effective beginning reading programs and on the use of corrective-clinical services for pupils at all grade levels.
3. Reduce class size and initiate more creative organizations for teaching reading.
4. Design and implement new and imaginative programs for preservice and inservice work in reading.
5. Involve the parents and community people in helping their own children to read better.

Will these practices be the open sesame to improved reading achievement for the disadvantaged? Once again, the answer is an emphatic *no!*—not the open sesame but paths of action to be followed with resolution, wise planning, and the united effort of all. The task ahead is great; but the floodlights are now being turned on in many of our cities. We can see what we are doing and know that reading improvement can be achieved in the here and now. Our disadvantaged can and must master the basic requisite to their future success as American citizens: *they are going to learn to read!*

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Pro-Challenger: Jo M. Stanchfield
Occidental College

DESPITE AMERICA's historic dedication to the principles of equal opportunity for all citizens, these principles have not been fully realized. Some racial and ethnic groups are still struggling on the fringes of a white, middle class society. In its attempt to meet the challenge of eliminating the ills of prejudice, poverty, and illiteracy, our society has been making sincere and dedicated efforts to alleviate the problems of the culturally disadvantaged. Many educators have been actively involved in efforts to overcome the critical educational neglect of these groups. Faced with the tremendous disparity between the upper and lower levels of the population, our society has been endeavoring in recent years to narrow the gap between the advantaged and the disadvantaged elements of our culture.

A most crucial problem is that of educating the children from limited cultural and economic backgrounds. Admittedly, we have not done all that should and must be done. Yet we can, indeed, point with satisfaction to many examples of progress—to successful programs which have surmounted tremendous obstacles in their inception and whose success is a tribute to the determination of government leaders, educators, and dedicated individuals.

Preschool programs

Among the most outstanding of the new programs is one which has been a front-line campaign in the War on Poverty—Operation Head Start. A grass roots project, financed by the Federal Government, Head Start has as its objective a well-rounded preschool program of cultural and educational experiences for deprived children in their most critical, formative years. Its purpose is also preventive and therapeutic: to discover problems at a time when they can best be alleviated, so that the children may go to their first experience in public school without the failure-inducing handicaps that their environment has fostered.

With financial help and guidance from Washington, Head Start projects are organized and administered within their own communities. This structure incorporates some distinctive

American elements—the community cooperation spirit of our earlier, individually oriented society, the do-it-yourself trend of today, and the support of a socially enlightened government and its agencies.

Since funds were first made available by Congress in 1965, thousands of Head Start projects have been established in cities and communities across the nation. Typical of these centers (8) is one of the first to be organized in south central Los Angeles, an area largely dominated by Negroes and Mexican-Americans with median incomes below the poverty level of $4000. Financed by a federal grant, aided by various federal and state and county agencies, supported by the cooperation and donations of local businesses and by the volunteer services of professional people, the center is dedicated to providing a total program of preschool experiences for 330 poverty-stricken youngsters.

As reported by two members of the staff, Clara Riley and Frances Epps, this Head Start center uses the team approach typical of other such programs. Utilizing the combined skills and services of teachers, psychologists, doctors, and social workers, the program contributes significantly to the lives of its children in four basic areas—health and nutrition, welfare, educational readiness activities, and parent education. The latter has proved to be an important factor in all preschool programs for the disadvantaged, and the social worker has played a major role in providing liaison between the centers and the homes. Although the welfare of the preschool child is stressed in family contacts, attention is also given to other needs—employment, health, and housing.

In its primary objective of preparing the children for public school, the program offers a balance of activities planned to provide for their intellectual, phsical, social, and emotional growth. The results of maturity tests, given at the beginning and the end of an eight-week period, indicate that despite developmental immaturity as a group the children show remarkable gains for their experience.

In this Los Angeles center, as with other Head Start projects, the success in preparing children for their first school experience has been the most significant result. Staff members, however, reported added values in related areas. The community orientation basic to the program has fostered a feeling of community cooperation and has helped to develop a sense of participation and responsibility among the parents. Other dividends have accrued to the teachers, who returned to their regular classrooms with new knowledge and understanding of the disadvantaged child and who have developed and broadened their own capacities for leadership.

The achievements of Head Start have inspired other new programs in the preschool field. The NEA *Journal*, reporting on Philadelphia's Project Get Set (*3*), described the purposes of this project as "aimed at innoculating children against failure." Get Set offers an eleven-month program for three- and four-year-olds, similar in many respects to Head Start. Aided by the Economic Opportunity Act of 1964, the first center opened in October 1965. By 1966 more than 4000 preschoolers were participating in a program designed to compensate for their deficient environments. Like Head Start, Project Get Set (*8*) combines the efforts of a team of professional people, including teachers, teacher aides, and home-school coordinators. It also conducts its own program of in-service education.

Follow through programs

While preschool programs such as Head Start and Get Set have won enthusiastic approval in the past three years, a question has naturally arisen about the experiences of these children when they go into kindergarten or first grade. Will the advantages of their "head start" be lost in crowded classrooms or ignored by teachers who do not have the time, training, or motivation to cultivate the seeds planted in the preschool program? President Johnson was determined that this neglect will not prevail. In his 1967 message to Congress he stated, "The achievements of Head Start must not be allowed to fade, for we have learned another truth which should have been self-evident—that poverty's handicap cannot be easily erased or ignored when the door of first grade opens to the Head Start child . . . follow through is essential."

Thus we now have Follow Through, a program announced in July 1967 by the U. S. Office of Education and the Office of Economic Opportunity. After preliminary planning, pilot projects were launched in September of 1967 in thirty districts throughout the country, and the full program was scheduled to begin in the fall of 1968.

Like the preschool programs, Follow Through will attempt to meet the needs of the total child. In announcing the program, Harold Howe II and Sargent Shriver said, "Each classroom will be organized to involve the fullest possible social and racial integration. The classroom will be equipped to provide a variety of educational experiences through individualized instruction and group activities directed to developing each child's self-esteem, his respect for other children and adults, and his own role as an individual in a group."

As outlined by Nolan Estes in *American Education* in September of 1967, the Follow Through pilot programs are experimental and will include a variety of approaches, each geared to the problems of the individual community. Hopefully, the results of the 1967 projects will have provided a sound basis for the complete program initiated in the fall of 1968. Estes (*1*), said, "Head Start has given a good start to a lot of youngsters. Follow Through can keep them headed in the right direction. It has every potential for encouraging schools to build quality and experimentation into their early childhood program."

Bilingual programs

Another area of vital concern in education for the disadvantaged is that of bilingual children. Concentrated efforts have been made in compensatory education for these children in many parts of the country. New York City has undertaken a large program on behalf of its Puerto Rican population, providing schools with teacher specialists in remedial reading, science, mathematics, guidance specialists, coordinators, and counselors. Other states which are giving special attention to the problems of the bilingual are Florida, Texas, California, Arizona, and New Mexico. In the southwestern states, where the plight of the disadvantaged

Mexican-American children overshadows that of other minorities, schools and community agencies are concentrating on the problems of these pupils. The program under way in Tucson, Arizona, (*9*), exemplifies the efforts of educators and administrators to integrate this group into school and society, to respect the native culture of these children, and to eradicate their poor self-image. Elementary bilingual teachers conduct bilingual classes, using audiolingual techniques to familiarize Spanish-speaking pupils with English.

Also in the Southwest, similar concern has been evidenced by the efforts to solve the educational problems of the American Indian children. Research has been undertaken for more than a decade to analyze the differences in achievement and the differences in culture of these children. Much of the research has been concerned with the educational achievement of the Indian children. Other studies have investigated the cultural differences of this ethnic group from other ethnic groups to provide teachers with the knowledge and understanding needed to teach Indian children.

As a result of one such study, Zintz (*10*) asserts that to teach these children successfully, the teacher must recognize that Indian children may come to school with a radically divergent set of values; and the teacher must try to understand, not disparage, these values. He points out some of the contrasting values which might well conflict—the Indians' tradition of harmony with nature rather than mastery over it; a desire for the status quo rather than to develop a sense of competition and success-orientation; and a preference for anonymity and submissiveness rather than for individuality and aggression.

The Bureau of Indian Affairs, the U. S. Office of Education, and colleges and universities in the Southwest have all been actively involved in studying the educational programs of this disadvantaged ethnic group, and many of the corrective measures indicated by their research have been undertaken. The most important result has been the transfer of Indian children from reservation schools to public schools, with the financial support of the Federal Government. Another result has been the divination of effective approaches to integrating these children into a different cultural environment.

Teacher education

The role of the teacher, while of primary importance in every area of preventive or compensatory education, is especially crucial in the education of the disadvantaged child. Inevitably, educators have had to face the criticism that the middle class teacher with middle class values is often unable to establish sound relationships with deprived children, and an effective teaching situation is inhibited. One solution to this problem has been in-service training to equip teachers to meet the challenge of teaching the disadvantaged. Also of significance have been new programs designed to recruit and train beginning teachers for work with these children.

Hunter College (7) established a program some six years ago to train teachers for specific schools in depressed areas. In this program volunteers for student teaching are introduced to the community and given an opportunity to become thoroughly familiar with the problems of the school and the pupils. By working with experienced teachers and by receiving close supervision and guidance from staff members, the student teachers are equipped to continue in the same school after graduation without encountering the problems which frequently discourage the novice from taking such an assignment.

The Los Angeles City Schools and other large California cities have an internship program which places fifth-year college students, after their first student teaching experience, in the inner-city schools. Also in California in Operation Fair Chance, we find another example of the determination of many educators to meet the challenge inherent in the prediction that by 1970 one out of every two pupils in large city schools will be disadvantaged. Fair Chance program is a three-year project in experimental teacher education conducted at two California State Colleges, Hayward and Fresno. The project was designed especially to help prospective and experienced teachers to "develop truly empathic attitudes toward the culturally deprived, to find more effective ways of teaching disadvantaged children and youth and of working with their parents and community leaders, to emphasize realistic pupil orientation to the world of work, and to produce more learning materials in this area." Although those who complete the course will receive an elementary or secondary credential, no conventional education courses will be taught. Instead, the program provides community study, Job Corps participation, school and community involvement, and supervised student teaching. Olsen (*4*) of the Hayward Center predicts that Operation Fair Chance "could lead to a revolution in teacher education in California State Colleges and throughout the nation."

Methods and materials

Of equal importance to specialized teacher training for the disadvantaged is the necessity of providing the teacher with instructional methods and materials specifically aimed at motivating the learner from a limited cultural background. The unique characteristics of these children necessarily call for unique instructional methods. Motivational approaches are essential—particularly for the Negro child.

Goldberg (*2*) describes one of these, St. Louis' Banneker District project, as "the most direct approach to remotivating pupils in a Negro slum district." This program concentrates on convincing both children and parents of the importance of success in school and of its relationship to success in life. Meetings with parents emphasized the need for providing encouragement and a proper environment for homework. The children were motivated in various ways—by being treated as though they had superior ability, regardless of their I. Q. scores; by school radio programs which broadcast the exploits of a "Mister Achiever"; and by community visits where they had the opportunity to see the relevance of school skills to vocational success and to build an image of the working, achieving Negro.

The success of this program is reflected in the results of its first three years: many students showed significant academic gains, and a greater proportion of junior high school students entered high school on a higher scholastic level.

Other motivational approaches which have shown promise are those in which the school program recognizes individual interests and abilities and provides opportunities for achieving and reinforcing success. Most large cities have programs which offer activities particularly suited to children from lower socioeconomic groups: music, dancing, drama, metal and wood working, and ceramics.

Another trend in instructional emphasis is that of school and classroom reorganization. Many schools have found that a first-through-third grade ungraded block is a success-inducing structure. Team teaching is also helpful with disadvantaged. Pittsburgh's Team Teaching Project (6), organized to resolve problems of population mobility, teacher turnover, and environmental deficiencies, uses different-sized teaching teams with varying sized groups of pupils. It also utilizes community resources to complement and support the schools' efforts.

Helpful to disadvantaged children on both elementary and secondary levels is a totally new educational concept—the education park, designed to replace the traditional school (5). This revolutionary idea entails the bussing of children from a large urban area to a central park containing a primary, middle grade, and secondary school complex. The new John F. Kennedy Education Park in the Bronx, New York, will include a high school for 4000 students, two intermediate schools for 3000 middle grade pupils, and a wing for 600 primary pupils. It is expected to have a 40 percent Negro and Puerto Rican population merged with children from both urban and suburban areas.

In addition to the obvious sociocultural advantages of such a scheme, the economic advantages are also significant: economy of operation, concentration of valuable physical and teacher resources, better use of educational technology, and a richer curriculum program. Other large metropolitan areas are expected to establish education parks in the near future with the help of funds available through federal aid to education.

The "crash program" currently in progress among publishers to develop improved instructional materials has resulted in a wealth of new materials of all kinds and descriptions. The resources of multimedia, while desirable in every learning situation, are particularly helpful with the disadvantaged. Considerable effort, understandably, has been expended in research and development of improved reading programs, and a wide variety is available. Several of these—Detroit's City Schools Reading Program, the Chandler Language Experience Readers, and the Bank Street Readers—present urban settings and experiences with which the disadvantaged child can readily relate. However, while orientation is important, it is not necessarily the most significant factor in motivating disadvantaged children to read. As Goldberg (*2*) points out, "Materials should be related to the world of the learner but not limited to his immediate environment. Stories about cowboys and rockets may prove more exciting and thus a better learning medium than those about the local firehouse or the sanitation truck."

The writer's research and resulting materials

The writer's research on the effect of high-interest materials on reading achievement in the first grade indicated that the children of two ethnic minorities responded enthusiastically to exciting, imaginative reading materials, even though the geographical background, that of Hawaii and Alaska, was far removed from their urban Los Angeles environment. The common denominator was the children's identification with real-life characters. As one little Negro boy said, after finishing the stories about Hawaii, "I like those books where they don't wear any shoes!"

This research was conducted over a five-year period, with 400 first grade children in Los Angeles City schools, to determine the effect upon their reading achievement of a variety of reading methods and materials. As a result of the research, a primary reading series of high-interest content was developed under a Rosenberg Foundation Grant. The purpose of this reading program was to provide motivation through content, to teach reading skills sequentially from the easy to the difficult, and to reinforce reading skills. The approach was an imaginative one intended to open children's minds to experiences that all children would enjoy and which are familiar to them through the medium of television.

In the first grade, the three preprimers and the primer are called *Exploring Lands in the Sea,* Books One through Four. The background of these books is Hawaii, where the characters enjoy typical experiences, such as—sliding on ti leaves in the mud, surfing, climbing coconut trees, having luaus, fishing, and camping. In the first grade reader, *Exploring Lands in the North,* the stories describe exciting adventures in Alaska—dog sled racing, salmon fishing, hiking on snow shoes, panning for gold—all things that children do there and that children anywhere could imagine themselves doing.

Because it was felt that children should learn more about their own country, the second and third grade books explore the United States through its national parks and monuments. These books are called *Exploring Forests and Mountains, Exploring Natural Wonders, Exploring Along Lakes and Rivers,* and *Exploring Lands Near the Ocean.* As the titles indicate, the stories are filled with exciting outdoor adventures that range from exploring ice caves on Mt. Ranier to camping out in the Everglades. These are the kinds of things that capture children's imagination and make reading come alive. All of the books contain color photographs in a geographic setting with line drawings to add zest and humor to the story content. Two characters are used as male models and as a vehicle for continuity in the series—Dan, a Caucasian, and Sid, a Negro. Dan and Sid are commercial pilots in the Islands, bush pilots in Alaska, and pilots for the forest service in the other states. Many ethnic groups are represented among the characters throughout the series—Caucasian, Negro, Polynesian, Mexican-American, and American Indian. Thus, beginning readers are given an opportunity to learn how people of all races live and work together. In addition to these related learnings, the stories, because of colored photography in a real-life setting, provide concomitant learnings in the life sciences and geography.

To help the disadvantaged learner, the teachers' manuals have been planned for sequential development of both comprehension and word analysis skills. Listening tapes have been prepared for each story in the books with appropriate self-checking follow-up exercises to be used independently by the children. Study prints, film strips, instructional aids, and interesting reading games have been developed for use with the reading books as added reinforcers for the child who has difficulty in learning to read.

The first grade experimental series was tested in ten Los Angeles City schools in 1965-1966. These schools covered a broad range of socioeconomic levels from middle class to lower class populations, with approximately equal numbers of Caucasian, Negro, and Mexican-American children. Results of the analysis of test data showed that the experimental groups using the new materials achieved significantly more in reading than the groups using the regular state texts, with means of 48.89 and 43.37, respectively. Among the three ethnic groups—Caucasian, Negro, and Mexican-American—the Negroes showed a higher adjusted mean, 50.34, than either of the other two groups.

Research now in progress has shown that deprived children who are using the second and third grade books like reading better than any other subject. The child who likes to read will learn to read well. In what better way, then, can we motivate these children to learn to read than by providing the spark to light their imaginations? It takes but one spark to ignite a torch that can brighten the darkest cavern.

Thus, although we, as educators, cannot single-handedly solve the deep and complex problems of our disadvantaged minorities, we can, with dedication and imagination, destroy the barriers of illiteracy for thousands of economically and culturally impoverished children.

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Con-Challenger: MELVIN HOWARDS

Northwestern University

THE QUESTION "Is the Reading Instruction that we are Providing the Disadvantaged Adequate?" is a complicated one. The simplest answer is: "No." *But*, in fairness to all, what reading instruction is adequate for any type of reader? Let us not oversimplify a serious problem. Reading instruction for the disadvantaged has had a great deal of publicity in the past three or four years. Since this is the first time America has seriously attempted to deal with disadvantaged readers on a large scale, it is no wonder that we have many more questions than answers to the problems which arise.

Before proceeding further two terms will be defined as they will be used in this paper: *Disadvantaged readers* will be considered as those who have socioeconomic deprivations—the slum dwellers, the rural poor, those who experience little choice or opportunity in our society, whether they be black, brown, or red. *Reading instruction* will be considered as involving elements: teacher, materials, methods, grouping, and evaluation. It is hoped that these brief definitions will permit us to answer the question in some of its dimensions.

The Office of Economic Opportunity took the lead in considering the needs of America's disadvantaged persons; the Office of Education is trying to do something for the disadvantaged but has not yet caught up with their educational needs. The changes occurring in American schools today, especially in reading and language skills, have been largely generated by outside forces, not by the schools or teachers or the universities preparing these teachers. This changing immediately stimulates a certain resistance among school people to accept new facts or even old ones concerning one segment of their population and their particular needs, educationally. So where do we begin?

Let us start with the teachers who work, often against their will, with the disadvantagd students. It is no surprise to anyone that the vast majority of the teachers teaching in schools attended by disadvantaged students are not themselves disadvantaged but are, in fact, quite middle class in their outlook. Frequently, the teachers are white and the students are black, or brown, or red; color may set up at least a temporary delay in establishing good relations. Furthermore, sometimes, teachers of the disadvantaged come from teachers colleges which appear to be somewhat backward in their approaches to teaching and learning. They seem to cling to methods, materials, and attitudes which are not in keeping with these disadvantagd people. The training they get for teaching reading is not geared to teaching the disadvantaged. Frequently it is inadequate in meeting their needs. Perhaps, one difficulty is that teachers too often are taught how to use basal readers or some programed material, but are not taught how to live in a classroom, part of a rapidly changing world, with youth whose values, ideals, and needs are somewhat different from those of the typical school child. The training most teachers get is too largely academic; there is not enough day-to-day contact with live students in real teaching-learning situations. Without this kind of experience prior to graduation and certification, teachers are at a very painful disadvantage themselves. So another aspect of teaching the disadvantaged is that teachers who work with these youth frequently feel just as disadvantaged as the youths whom they teach. This feeling is due in part to their own inadequate and unrealistic training and in part to the need for new ways of grouping and talking with these youths.

Most teachers whom the writer has observed working with the disadvantaged are not competent in talking the language of these youngsters or of understanding it either semantically or psychologically, and the children are aware of this.

Of course, the teachers are quite bound by administrators and schedules and so on. If we are to begin to meet the needs of disadvantaged youth, especially in reading and language skills, we shall need to get away from arbitrary schedules and sequencing of learning activities. Permit the writer to give an example from his own situation which illustrates this point. We have been operating a school for high school dropouts for two and one-half years now, and we have youths whose reading levels range from the nonreader (and non-English speakers) to tenth or eleventh grade. The average reading score on the California Reading Test and an individual informal diagnosis shows that of the 250 or so students currently enrolled in our school (and this situation has been true from the beginning) the reading level is sixth grade. At the same time, the average number of grades completed by these students, who it is believed are representative of others in the country, is 8.6. The number of youngsters who have come to our school after having quit in ninth or tenth grade and who read at third, fourth, or fifth grade level is almost inestimable. And these are intelligent individuals. We watch them in our school, and we have seen the vast majority develop in reading and seemingly in intelligence. Certainly the teachers we are using respond and feel different toward these youths than do the teachers in most public schools from which the youngsters have fled.

With these pupils we do not start out with flash cards or fancy hardware. We start, where the writer believes all teachers should start, with the student, his language and his needs. The teachers in our school are firm, sympathetic, and educable—maybe that is the key word *educable*. Perhaps, too many teachers and administrators are no longer improving their education. Their college degrees seem to mean completion—an end to their academic achievement. We are trying to learn continuously as we use the experience, language, and feelings of our students to build with them (not *for* them, or in *spite* of them) a curriculum which is relevant and important to them. It works—not perfectly or without problems, but it works and it has for two and one-half years.

The teacher of disadvantaged youths has many contacts with many people: colleagues, administrators, students, and parents. He must learn to work productively with all of these people. Since he is the key person in the learning process, he must also improve his own education. He must have much more actual teaching experience, under supervision, prior to student teaching and certification. There is no point in having certified but unqualified (to steal Riessman's term) persons in this difficult business. Teachers also must learn more than methods and materials; they have to learn to live *in* the community they serve and to participate fully in it. This task is important in all communities, but especially so in disadvantaged ones. These youngsters and adults often do not like white missionaries or portable knowledge machines.

Methods must be considered when answering the question as to the adequacy of reading instruction for the disadvantaged. Since there are so many different methods of teaching reading and since the Office of Education's First Grade Reading Study clearly showed that methods or materials are not so important in effecting reading behavior as is the teacher, no further discussion of this point is necessary. The writer's experience in working with black, brown, and red persons of all ages for the past four years indicates that the most significant factor regarding methods and materials is that they be relevant in the life of the learner.

Most programed material has proved to be of little value to disadvantaged persons with whom the writer has worked. He has found that these persons, having finally been discovered and attended to by someone who cares, want personal attention and social interaction. Machinery and programs tend to isolate many of these youth and adults from the personal companionship they need. Also, most of the material, programed and otherwise, which is now available, does not speak specifically enough to particular groups, such as, Indians or Mexican-Americans. As the result of the actions and decisions of the Office of Economic Opportunity and the Supreme Court, many of these deprived persons have just begun to develop a bit of pride in themselves, their group, and their heritage. Teaching materials need to be extremely sensitive to these critical needs. Also, very importantly, it must be noted that adolescents and adults who are disadvantaged, who read poorly—if at all—and whose other language skills are very poorly developed have a lifetime of experience and perception: they *feel* and they *think*. Teaching materials need to be responsive, and most of them are not. Coloring illustrations black, brown, or red is not the answer. The answer is to develop materials which, with a good teacher's help, will call forth the experience and sensitivity of these students as these factors bear on real and immediate problems and issues. We have many, many copies of poetry, short stories, and other writing of people of all ages from all over the country—material they wrote themselves out of their own world and their own perspective on that world. With such written material it does not take much to build word recognition, study skills, or meanings or to work on spelling, grammar, and vocabulary. We must give these youths and adults credit for having lived and survived in an extremely hostile world. We should use this background as the raw material for instruction until basic reading and writing skills are developed, and then move on. From graffiti on bathroom walls to Shakespeare is a bit of a jump—but not if you start where these young people are and with what is important to them. This category includes their jargon, their hip or street talk, much of which is filled with imagery and metaphor. Use it; do not judge it with imposed standards and biases. Language is language.

The only method I can really suggest is the one which says to you as a teacher: look at that youngster closely with feeling, hear him, and loosen up. As they say, "Let it all hang out," occasionally.

There is a place for emotion in the classroom and in learning situations. It is there whether we want it or not. Learn how to use it. The black, brown, and yellow cultures in America, especially, are quite responsive to honest human emotion and feeling in language, music, and interpersonal relations. Teachers often avoid it; and most books and materials ignore it, also.

The writer's answer, then, to the question "Is reading instruction for the disadvantaged adequate?" still is basically "No," in spite of the fact that there are quite a few good and imaginative programs which have been initiated to reach these persons. Generally, in the public schools, we have scarcely begun to be relevant, legitimately emotional, and deeply concerned with those who compose the disadvantaged groups. The Puritan ethic must leave the classroom and make way for feelings and interpersonal relationships which start wherever the learner is.

IT IS ONLY RECENTLY that the term *modality* has been heard or read in discussions on reading. The concept, however, and the term itself are very old. Freud reported that J. M. Charcot initiated the concept and term in his *New Lectures* in 1886 in which he indicated that each person has a preferred modality in learning; thus there are "audile, visile, and tactile learners." Research in regard to this concept has occurred intermittently through the years. Recently there has been an upsurge in such research, and those interested in reading are currently studying this research for any significance that it may hold for improving reading instruction. The concept, together with its related research, is competently discussed in the three papers that follow.

Visual and Auditory Modalities: How Important Are They?

MIRIAM BALMUTH
Hunter College

THE CURRENT ISSUE with which we are concerned here is that of visual and auditory modalities. Very often, however, so-called "current issues" have longer histories than is presumed at first glance.

For approximately eighty years, questions have been raised in this country concerning the importance of the various modes of learning, particularly the auditory and visual modes. Among the most frequently asked questions have been: Is one modality more effective than another for learning? Is the simultaneous use of two or more modalities more effective than using one modality alone? Is changing from one modality to another in presenting the same material more or less effective than calling upon just one modality? Are there individuals who are inherently audile, visile, or kinesthetic? What part, if any, does age play in modal preference? Do poor readers have modal characteristics which are in any way different from the modal characteristics of good readers?

Before starting to trace the literature relating to these questions, the thought arose that the number of available studies might be rather limited. The reverse, of course, is true. Actually, a great deal of investigation of the modalities has taken place; and, although reference to the functioning of the senses would be useful in any discussion of the modalities, the major problem has been to select representative, cited examples from among the many modal investigations and then to group these selections sensibly in order to facilitate examination of comparable studies.

In grouping the studies, it was found that investigators have tended to examine one or more of five major questions. Although all five questions are related to reading only three of them will be discussed in this paper, leaving the questions of inherent modal types and of transfer of modalities for another time.

The superiority of one modality over another

In the first category the superiority of one modality over another was studied. Usually, the auditory and visual modalities were thus compared. An example in detail of such a study is that of Munsterberg (*17*). In 1894, he reported the first of a series of experiments which was part of a systematic study of memory at the Harvard Experimental Laboratory. Five adult male subjects were presented with a series of colors and a series of numbers. They were then given papers with the names of the numbers and the colors written on them. Their task was to arrange the written numbers and colors in the order of the presented series. The visual presentation was in the form of squares of colored papers and white cards on which the numbers were written in black. The auditory presentation was given by the investigator saying the names of the colors or numbers. There was also an auditory-visual presentation in the form of simultaneous saying and showing of items. There were thirty-two different kinds of series, consisting of various combinations of colors and numbers and of modal presentations. The experiment took place for a total of fifty hours for each subject, during the winter of 1892-1893. Variables of fatigue, training, and practice were controlled. There were no tests of significance, and the conclusions of the investigator were based on inspection of the percentages of errors made. However, despite this lack of reported levels of significance and despite the dismissal of the results of early studies by later investigators such as Van Mondfrans and Travers *(24)*, Munsterberg's data are extremely clear, and it is rather simple to apply tests which were nonexistent in 1894. Munsterberg's conclusion that "With all the subjects, the visual memory excels strongly the aural when they act independently" is validly based on his data. His conclusion becomes even more valid when the trends for each of his five subjects are examined and the results are extrapolated for larger n's.

Some other investigators who, using adult subjects and various verbal and nonverbal stimuli, also found that the visual mode was clearly more effective than the auditory mode. These investigators include Hawkins in 1897 *(7)*, who used names of objects; Calkins in 1898 *(4)*, who used words and pictures; and Beik *(1)*, in 1962, who used audio and video advertisements.

Different results for adult subjects were reported by other investigators. Kirkpatrick *(13)* in 1894 compared visual and auditory presentation of words and pictures and found that there was no difference in results whether the auditory or the visual mode was used. The ability to recall pictures, however, was greater than the ability to recall words, no matter which mode was used. Other researchers who found no difference when visual and auditory modes were tested include Quantz in 1897 *(21)*, who used one-syllable words, and O'Brien in 1921 *(18)*, who used words and nonsense syllables.

Henmon, however, in 1912 *(8)*, concluded that with concrete nouns, two-place numbers, and nonsense syllables, the auditory mode was markedly superior for his adult subjects whether the mode was used alone or in combination with kinesthetic modes. Unfortunately, in his report, Henmon neglected to give the precise numerical data upon which he based his conclusions. However, in 1967, using ninth and twelfth graders, Cooper and Gaeth *(5)* also found that the auditory mode was more effective than the visual mode with both nonsense and meaningful paired associates.

Examination of the preceding reports indicates that there is obviously no consensus regarding the relative effectiveness of the auditory and visual modalities among adults.

Studies have also been done comparing the effectiveness of the auditory and visual modalities among children. Hawkins (*7*), who had found that the visual mode was more effective for his adult population, presented the same noun stimuli to children ranging from eight to twelve years of age. He found that, for these younger subjects, the auditory mode was more effective at each age, particularly for the eight- and twelve-year-olds. Unfortunately, he did not indicate the number of subjects he used in his study.

Although few other researchers who used child subjects compared the two modalities over such a wide range of ages, the results of the other studies often varied considerably from those of Hawkins. In agreement with him for even younger subjects, however, Budoff and Quinlan (*3*) in 1964 concluded from their study of the learning of paired associate words by fifty-six second graders that the auditory mode is significantly more rapid and effective for learning meaningful material than is the visual mode among primary grade children.

In 1966, for the same second grade level, Hill and Hecker (*9*), who referred back to Budoff and Quinlan's investigation with verbal stimuli, found that when the visual presentation was in the form of pictures rather than words, neither the auditory nor the visual modality was more effective. This relatively greater ease of learning pictures rather than words had been noted earlier by Kirkpatrick (*13*) and by Calkins (*4*).

For fourth graders, Lockhard and Sidowski (*15*) in 1961 found that in the learning of lists of nonsense syllables, the visual mode alone or even in combination with other modes tended to be more effective than the auditory mode. Similarly, in 1967, Cooper and Gaeth (*5*) found that fourth graders used the visual modality more effectively than the auditory modality with nonsense syllable paired associates. Hawkins's fourth graders had found that, with words, the auditory modality was more effective.

Similarly for fifth graders, Cooper and Gaeth found the visual mode more effective for nonsense syllables while Hawkins found the auditory mode more effective for words.

In 1928, Russell (*22*) found that the auditory mode was more effective for his group of seventy-two fifth graders when they were tested on the contents of a 1000-word essay on the mongoose. However, Russell's seventh graders used both modes equally well, and his ninth graders found the visual more effective. A factor which may have been significant here is the readability of the essay. Reading skill rather than the mode may have contributed to the increasing effectiveness by age of the visual mode.

Walters and Kosowski (*25*), in 1963, found that for fifth, sixth, and seventh graders, the visual presentation of colored lights was more quickly responded to than was the auditory presentation of nonverbal tones. Similarly, in 1965, Many (*16*) found that sixth graders scored higher on visually presented questions about visually presented material than they did on orally presented questions about orally presented material. Lockhard and Sidowski (*15*), however, found that there was no significant difference between the two modalities for their sixth graders in the learning of lists of nonsense syllables.

On the whole, examination of comparisons of single modalities among children indicates that the evidence leans somewhat in the direction of the greater effectiveness of the visual modality, although consensus has by no means been reached.

The simultaneous use of different modalities

A second category of studies of the modalities deals with the question of whether the simultaneous use of more than one modality is more effective than using one modality alone. Starting with the earliest studies, attempts have been made to compare the results of learning through audiovisual or other modality combinations. Frequently, the kinesthetic or motor modality in various forms has been part of such combinations.

The question of using more than one modality at the same time is of particular importance for beginning reading instruction. It is then, when the prime task is to transpose aural language to written forms, that understanding the relative effectiveness of using more than one modality to help in this task is essential. A number of reading methods have focused upon the simultaneous use of more than one modality. Fernald's technique is an obvious example of this use. In addition, using writing or discouraging writing in the development of word recognition skill and requiring oral reading before silent reading or vice versa are techniques which, whether the practitioners are aware of it, are based upon assumptions about the value of the simultaneous use of more than one modality.

In the study reported above, Munsterberg (*17*) found that when his colors and numbers were simultaneously displayed and named aloud, there was an enormous decrease in the average number of errors made. Quantz (*21*), investigating whether persons who are distinctly visile are more rapid or more intelligent readers than those who are distinctly audile, found that adding the motor modality by having such subjects read the one-syllable words aloud was a hindrance.

O'Brien (*18*) used ten types of sensory modes—the auditory and the visual and eight combinations of two, three, or four simultaneous modes. So many combinations were possible because he identified the "vocimotor," or articulating, and the "manumotor," or writing, as two separate motor modes and then proceeded to make combinations such as visual-auditory-manumotor and auditory-vocimotor-manumotor. Actually, other studies had used some of these combinations (Whitehead (*26*) for example) but had not focused on which modalities were actually being used, and some erroneously referred to their findings as if they were based on purely auditory or purely visual modes when simultaneous use of another mode had been in operation at the time. Unfortunately, as O'Brien himself noted, it was difficult to bring subjective factors under control in his study, but he did report that the visual-vocimotor was the most effective by far of his ten modes.

Krawiec (*14*) in 1946 concluded that "the visual mode of presentation is especially adapted for the learning of difficult verbal material," defining nonsense syllables and unrelated nouns as difficult verbal material. However, he required his undergraduate subjects to pronounce and spell aloud each syllable for the visual task, while the auditory task involved just listening to the items read aloud. His results obviously relate to a visual-vocimotor mode rather than to the visual mode and actually affirm the greater efficiency of this plural modality.

Far too rarely in modal investigations has there been any reference to models of the perceptual system or of brain functioning. While we may assume that in many instances the investigator had some such model in mind, it is difficult to reconstruct it with certainty. In addition, some investigators have hypothesized without reference to any model at all. One of the few investigations which clearly relate to a perceptual model is that of Van Mondfrans and Travers (*24*) who outlined their understanding of Broadbent's thinking. They stated that Broadbent conceived of the perceptual system as a single system. This thought implied that at any one time, only input from a single channel has access to higher centers of the brain. The inputs entering from other sensory channels at that time are stored (for a few seconds) until the channel to the higher centers is free. Only then can the inputs that were briefly stored pass through. When an input does not gain access, it is lost. From this, Van Mondfrans and Travers reasoned that multiple channel inputs of the same information ought not to facilitate learning. They hypothesized, however, that perhaps if enough time elapses during inputs, the learner can switch from one sensory signal to another and hence increase learning by having, in effect, an extra trial. To study this time factor they designed two experiments in which single-modality and dual-modality stimuli were presented at four different durations: four seconds, two seconds, one second, and .6 second. Each of three groups of twenty-four undergraduates was presented with a list of either nonsense syllables, unconnected words, or words in meaningful groups of four. The visual presentation was on filmstrip, and the auditory presentation was on tape. An audiovisual presentation was presumably simultaneous.

The results indicate that for learning words, connected or unconnected, there was no significant difference between any of the modes. For learning nonsense syllables, the auditory mode was significantly inferior to both the visual and the audiovisual, while there was no significant difference between the visual and the audiovisual modes. Strangely, although the authors reported the fact that the visual presentation apparently lasted a good deal longer than the auditory presentation (at some stages, as much as two to four seconds longer), they do not refer to the longer visual exposure time as a possible factor in the superiority of the visual mode.

Later, in 1966, Jester and Travers (*10*) found, in presenting eight passages of the Davis Reading Test to undergraduates, that although the auditory mode was superior at the lower rates of presentation and the visual mode was superior at the highest rates, the audiovisual presentation was superior to either of these single modes for learning efficiency as well as for test-item performance. The authors reason that perhaps this greater efficiency of the dual mode is due to the fact that with two modalities from which to choose, individuals with modal preferences can utilize the mode of choice.

Lockhard and Sidowski (*15*) also compared single and plural modalities and found that when writing was added as a task after either visual, auditory, or visual-auditory stimulus presentation, their fourth graders did better. Their sixth graders did better when they did not use writing.

Modality studies specifically focused on reading

The third category of modality studies includes those that were designed specifically to focus on reading, although all of the studies, except those using only pure tones, lights, or pictures, required some form of reading ability, even if only in the form of decoding CVC trigrams.

One of the first to investigate modality and reading was Quantz (*21*) in 1897, who concluded from his investigation with adults that visual perception should be placed above practice, concentration, intelligence, and academic proficiency as a contributing factor to rapid reading.

Otto investigated modes of learning and reading achievement among children, examining variables which he stated had not been checked in earlier studies. Intelligence, the relationship between mode of reinforcement and reading achievement, and the interaction of grade placement with reading level for mode of reinforcement were reported upon (*19, 20*). In both studies, he used paired associates (geometric forms and CVC trigrams) and presented them with either auditory, visual-auditory, or kinesthetic-visual-auditory reinforcement. In the 1961 study he identified the good, average, and poor readers among 108 second, fourth, and sixth graders with average IQ's and tested each subject in turn, using one of the three modes of reinforcement. Results indicated that the lower the grade, the more trials were necessary in order to learn the paired-associates. Also, good, average, and poor readers, in that order, needed more trials for learning. Mode of reinforcement interacted significantly with grade level so that the k-v-a was more effective for second graders; the v-a, for fourth graders; and both these modes were about equal for sixth graders. There was not, however, significant interaction between mode of reinforcement and reading level. When retention of what was learned was tested, it was found that good and poor readers retained what was learned equally well. In his 1963 study, Otto used the same task and modes of reinforcement as in the 1961 study. Now, however, he wished to investigate whether poor readers learned the paired associates more slowly because they had poorer sensory discrimination for the stimulus items or because they had greater difficulty in reading the CVC trigrams. He used thirty poor readers in grades four through seven, with IQ scores ranging from 92 to 129, and examined their abilities to discriminate the geometric forms and the trigrams as well as to read the trigrams.

He found that neither poor discrimination nor poor reading of the trigrams was significant. In addition, scores resulting from administering the learning tasks to the subjects indicated that there was no significant difference between the modes of reinforcement, a finding contradictory to the findings of his 1961 study. Otto suggsted that manipulating IQ as a variable in a larger study might lead to an explanation for the contradiction.

In 1963 in Canada, Walters and Kosowski (*25*) also studied the modal responses of good, average, and retarded readers by using sixth, seventh, and eighth graders with "no emotional or behavior problems" or hearing or vision anomalies. The stimuli were nonverbal pure tones and colored lights, to eliminate the variable of reading. The subjects were divided into two groups matched for age, grade, and reading/intelligence discrepancy scores. In addition to comparing the speed of response to the visual and auditory stimuli, the investigators were interested in the reward/nonreward variable and told one group that they would be rewarded for successful efforts. Results indicated that, in the auditory task, rewarded retarded readers did as well as the good and average readers in the other groups and significantly better than the nonrewarded retarded readers. There were no significant differences in speed of reaction to the visual task. Walters and Sidowski concluded that "retarded readers need an incentive in relatively difficult learning situations and also that, unless highly motivated, retarded readers tend to be less attentive to stimuli." Further, difficulties in learning may, therefore, be partly a function of a reduced ability to attend to stimuli. For their total sample, Walters and Sidowski found that there was a highly significant transfer effect when change was made from one mode of presentation to another, whether it was the auditory or the visual mode which came first. They reasoned from this finding that "once the general nature of the symbolic learning problem is understood, the principles involved can be generalized to somewhat similar situations to facilitate the learning process."

In 1963 in New York City, Katz and Deutsch (*12*), using 48 first, third, and fifth graders compared average, high reading-achieving Negro boys (97.9 mean IQ), with low reading-achieving Negro boys (82.1 mean IQ) for cross-modal reaction time and for same or "ipsi"-modal reaction time to pure tone and colored lights stimuli. They found that the relation between mode of stimulation and reading level was not significant. However, they found that, although there was a decided trend for all subjects to have greater difficulty in shifting from one modality to another, the retarded readers had significantly greater difficulty than did the normal readers. These findings concerning modal shifting are contradictory to the findings reported by Walters and Sidowski, and may perhaps be accounted for by the differences in the subjects of the two studies (age, intelligence, and, possibly, socioeconomic background).

In 1965, Birch and Belmont (*2*) investigated the auditory-visual integrative ability of 220 children (120.3 mean IQ) from kindergarten through sixth grade by having the subjects match an auditory pattern which had been made by a pencil tapping with a similar pattern transposed into dots. A correlation of .56 was found between IQ and auditory-visual integration and of .70 between reading readiness and auditory-visual integration. It was noted by the authors that the task tended to approach an asymptote after age seven as the scores for the children tended to level off and that, therefore, more data was needed in this area. However, they concluded that the findings suggested that "primary perceptual factors may be most important for initial acquisition of reading skill, but factors more closely associated with IQ are more important in its elaboration."

Katz (*11*) came to a similar conclusion in 1967. Although the primary purpose of her study was to check on the role of stimulus familiarity in the relation between discrimination and reading performance, there was also a comparison made between the auditory and visual discrimination performances of normal and retarded readers of different ages. Her 72 subjects were second, fourth, and sixth grade Negro boys from low socioeconomic backgrounds separated into good and poor readers. Monosyllabic three-letter word pairs in English and in Hebrew were presented visually on slides and auditorily on tape. The subjects were asked to tell whether the words in each pair were alike or different. Results indicated that for the total sample, the visual modality was more effective with the familiar English words, while the auditory modality was more effective with the unfamiliar Hebrew words. Katz notes that this finding is contradictory to the findings of Budoff and Quinlan (*3*) and suggests that either the task differences or the population differences in the two studies may account for this contradiction. It was also found that while older children and better readers at each grade level were better discriminators, the "differences in discrimination performance between good and poor readers at the second grade level were significantly greater than differences at the fourth and sixth-grade levels." This finding leads Katz to suggest that while deficient perceptual skills may be very important as factors in reading disability at earlier stages of reading instruction, a deficiency in cognitive abilities may be more significant at maintaining reading disability during the middle elementary grades. This suggestion is similar to the conclusion of Birch and Belmont (*2*) noted previously.

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Pro-Challenger: MILES A. TINKER

University of Minnesota

IN GENERAL, the writer is in agreement with what Balmuth has so ably presented concerning the role of visual and auditory modalities as related to reading. However, we might consider a little more fully under what circumstances listening (auditory) comprehension tends to be superior to reading (visual) comprehension. For most children, as soon as the mechanics of reading become largely automatic, a process which occurs sooner for the more able child, the two modes of comprehension progressively become more nearly equivalent. Then, as greater proficiency and maturity are reached, reading (visual) comprehension usually becomes greater than listening comprehension. For many children, this shift tends not to take place until the fifth grade or even later (*11*).

It is practically impossible to find any aspect of reading where either visual, auditory, or both kinds of perception are not involved to some degree. In other words, both are all important for the child learning to read and also for the adult in his reading. The large number of research studies published each year on visual and auditory perception in reading emphasizes the role of both vision and hearing. Also, an examination of the exhibits of reading materials at conventions will quickly show the importance of vision and hearing in the teaching of reading.

Let us note some typical areas in the field of reading where vision or hearing or both are involved:

1. Auditory-visual aids to learning bring into play visual and auditory modalities. Without good vision and hearing these aids would be ineffective.

2. Programed teaching of reading depends upon accurate visual perception and in certain setups upon hearing also.

3. Improvement in speed of reading requires accurate and rapid visual perception if gains are to be achieved.

4. Optimal legibility of print is required to produce rapid and accurate visual perception. Proper size of type is needed for

prompt and accurate discrimination of letters and words. Other legibility factors which are involved include type face, length of lines, leading, type form (lower case vs. all capitals), quality of paper, and color of printing ink. Any nonoptimal condition will not only retard rate of reading but also make undue demands upon visual discrimination. When this flaw occurs, comprehension and the thinking side of reading are handicapped (*9*, *10*).

5. To have efficient eye movements in reading, accurate and effective visual perception is necessary. Otherwise there will be confusion, accompanied by numerous, regressive eye movements in apprehending the printed message.

6. In any reading readiness program, both good vision and good hearing are essential. This condition is true whether the readiness program occurs prior to school, in kindergarten, in grade one, or later. Visual and auditory discrimination are prominent in any readiness work.

7. Examination of reading tests will reveal the importance of visual discrimination needed for correct responses, a situation especially true for such tests as those for reading readiness, the Doren Diagnostic Reading Test for various aspects of word recognition, the Bond-Clymer-Hoyt Silent Reading Diagnostic Tests, Roswell-Chall Diagnostic Reading Test of Word Analysis Skills, and various others.

8. Visual and auditory discrimination are essential in remedial reading. Every child in difficulty with his reading is given a visual and a hearing test in diagnosis.

9. The use of short exposure devices requires exacting and rapid visual discrimination.

10. Vocabulary acquisition and use involve both vision and hearing. In verbal communication the auditory is dominant, and in reading silently visual discrimination is central.

11. Finally, one may say that without good vision and hearing the child probably will be handicapped and may become a retarded reader. In every act of reading either vision or vision plus hearing is involved.

Experimental studies

As pointed out by Balmuth, a host of studies have been concerned with visual or auditory discrimination in relation to learning to read.

Durrell and his students report a series of investigations on success in first grade reading. Following are some of the findings of four of his investigators:

Nicholson (*7*) made an extensive and precise inventory of certain visual, auditory, and kinesthetic abilities in relation to reading letters and words to ascertain the retention capacities of first grade entrants for sight words and to relate these abilities to chronological age, mental age, and sex. The ability was checked of these first grade entrants to match letters, to identify letters visually and auditorily, to give sounds of letters, to identify sounds in words, and to learn sight words. One of her findings was that a knowledge of the names of letters provides the greatest assurance of success in learning to read.

Olson (*8*) followed the growth in reading and word perception throughout the first half of the year for first grade children. The children were tested in September, November, and February. Instructional emphasis was upon letter names, auditory discrimination of word elements, and beginnings of phonics. The findings indicated that early teaching of letter names and of various aspects of phonics is essential to rapid progress in reading.

Gavel (*4*) measured the June reading achievement of the pupils in the investigations just described. She found that the September tests which best predicted June reading achievement were writing letters dictated, naming letters, identifying letters named, and learning rate for words. The average reading level at the end of the year was above the national norms, i.e., grade 2.6 to 2.1 (four groups). There were very few retarded readers at the end of the year.

Linehan (*6*) evaluated the effect of a program of systematic teaching of letter names and sounds upon first grade reading achievement. Her experimental group had a systematic presentation of letter knowledge and phonics with an incidental teaching of word recognition. In contrast, the control group had a systematic program of word recognition with incidental teaching of letters and phonics. In February the experimental group was significantly better in oral reading, silent reading, applied phonics, hearing sounds in words, and letter knowledge. In June the experimental group was significantly better than the control group in all measures but word classification, silent reading, and word recognition.

In summarizing the above studies Durrell (*3*) points out the following:

1. Nearly all reading difficulties can be prevented by a teaching program which provides early instruction in letter names and sounds.

2. Early teaching of letter names and sounds produces a higher reading achievement in June than when such instruction is given incidentally throughout the year.

3. Knowledge of letter names at school entrance is the best predictor of February and June reading achievement.

Whether or not one agrees with the above conclusions, the findings of the studies cited would seem to graphically illustrate the extremely important role played by visual and auditory discrimination and perception in beginning reading.

A few more recent experiments may be mentioned. All of the findings indicate the highly significant role of visual perception in reading achievement. Hackney (*5*) determined which of the word recognition skills taught in a basal program had been acquired by fourth grade pupils. The 1,711 pupils were divided into three groups on the basis of reading achievement: a very high, a median, and a very low group. All were given the Doren Diagnostic Reading Test of Word Recognition Skills. Hackney found significant differences in all of the visual skills tested from one group to each of the others in that the higher the reading achievement, the better the visual skills.

In another study of 1,490 fourth grade pupils, Benz and Rosemier (*1*) investigated the relation of word analysis skills, involving visual and auditory discrimination, to reading comprehension. The word analysis skills included words in context, syllabication, root word, word elements, beginning sounds, and rhyming sounds. Pupils were placed in high, middle, and low reading comprehension groups. Again, all comparisons between adjacent groups differed significantly on the word analysis tests. (Bond, Clymer, and Hoyt Silent Reading Diagnostic Tests) showing a strong positive correlation between achievement in reading and ability in word analysis.

Numerous other experiments which involve visual and auditory discrimination could be cited. Such data emphasize the role of vision and hearing in reading performance.

For instance, the U. S. Office of Education First Grade Reading Studies (for summaries see *Reading Teacher,* May and October 1966 issues) present much material that relates to visual and auditory perception—i.t.a., linguistics, and phonetic stress.

Chall (*2*), in her survey of reading experiments, found that decoding (learning the letter names and sounds plus phonics to learn what words say) emphasis at the beginning of Grade One produced better readers than did starting with a meaning emphasis as seems to be prevalent in basal series. Such an emphasis places strong stress on visual and auditory discrimination.

In summary, all the data on teaching reading reveal that vision and hearing are extremely important. This finding is true not only for beginning readers but readers in later grades. In fact, without both good vision and hearing, satisfactory progress in reading is most unlikely. As Balmuth and the writer have reported, auditory perception has special significance for the beginning reader. In certain remedial cases it may also take on special importance. But for the more advanced and able readers the use of visual modality becomes predominant, a factor which in no way negates the necessity for appropriate application of auditory skills.

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Con-Challenger: **ANNA S. HARRIS**

Mt. Vernon, New York, Board of Education

VISUAL AND AUDITORY MODALITIES: how important are they? All of us are aware of the serious nature of the problem facing educators today—the high percentage of children who are retarded in reading. Deutsch and his associates (4) state, "Although remediation is clearly necessary, a more comprehensive approach to the reduction of reading disabilities requires the delineation of causal variables." They further declare that it is assumed by most educators that the beginning reader is equally proficient with regard to both auditory and visual channels of communication. In many cases such assumptions may not be at all warranted. Thus, the importance of visual perception, as a factor relating to reading achievement, has begun to receive increasing attention.

In 1958, Frostig (6) developed a test based on the assumption that adequate visual-perceptual skills are of crucial importance in learning to read. The test explores visual-perception skills in five areas: eye-motor coordination, figure-ground, form constancy, positions in space, and spatial relations. Since that time, many investigations with the use of this test as a diagnostic and prognosticating instrument have been instituted. If Frostig's postulates are true, then there should be a direct relationship between her tests and skills involved in reading. Let us examine some of the recent evidence.

In 1964, Rosen (*13*) studied the effect of perceptual training upon the reading achievement of first graders. In this exploration a stratified random sample representing a typical large urban-metropolitan area was selected from 74 Minneapolis public elementary schools. Before the experiment took place, the Metropolitan Reading Readiness Test and the Marianne Frostig Developmental Test of Visual Perception were administered to 637 pupils. The classrooms were then randomly assigned into experimental and control groups. The children in 12 experimental classrooms received a 29 day adapted Frostig program, while 13 control classrooms added comparable time to regular reading instruction.

Analysis of the data revealed improvement in the perceptual capabilities trained, but improvements in these abilities did not reflect themselves in comparable improvement in scores or measures of reading ability. As a matter of fact, in two of the analyses, the control groups excelled experimental groups, with the implication that the added reading instruction produced more desirable results than the perceptual training.

In 1965, Jacobs (9) undertook a study to ascertain the effect of the Frostig remedial program on the reading readiness of disadvantaged children. Six prekindergarten classes, six kindergarten classes, and six first grade classes in three disadvantaged schools with a total of 500 subjects were involved in the experiment. One class within each grade and each school was selected at random and received the Frostig remedial program for nine months. The other classes served as controls.

An analysis of the data revealed that there was no evidence to support the hypothesis that kindergarteners who have participated in the Frostig program for nine months perform better on a reading readiness test than those who were not enrolled in such a program.

Olson (*11, 12*), in 1916, reported two studies in which he examined the relationship of general school achievement, reading abilities and perceptual abilities measured by the Frostig test.

The first study involved 71 subjects in the second grade. Children were tested with the Frostig, an intelligence test, and reading tests. The data revealed that the individual tests on the Frostig test show only a small degree of relationship between the results obtained and the specific reading abilities tested. The Frostig test was of little value in predicting the specific reading abilities of the students tested in this study.

The purpose of the second study was to further investigate Frostig's findings that visual perception difficulties were by far the primary contributors to learning difficulties. Similar tests were administered to the third grade group. Complete results were obtained for 121 subjects, and the scores were correlated with the Frostig. Olson concluded that while visual perception difficulties and specific reading difficulties showed a moderate de-

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gree of correlation in some instances and no significant correlation in others, the results of the testing on this population did not support Frostig's postulates concerning the relationship between her tests and specific reading difficulties.

In 1966, Cohen (*2*) conducted a study to test the hypothesis that visual perceptual training could produce significant gains in visual perception and reading progress. One hundred fifty-five first grade children, identified as those with visual perception difficulties, received visual training with the Frostig program. The findings did not indicate a significant relationship between training in visual perception and gains in reading achievement.

Experiments in visual perceptual training with instruments other than the Frostig are also reported in the literature.

Goins (*7*) in 1958, on the basis of her research, concluded that tachistoscopic training of children 5½ to 7½ years of age in the perception of shapes did not improve reading skill.

Lloyd (*10*) conducted an experiment in 1966 to measure the effects of programed perceptual training on the reading achievement and mental maturity of selected first grade pupils. Sixty-four first grade students, 30 experimental, and 34 control subjects were given the Howard-Dolman Test of Depth Perception. The test was administered twice a week for a period of three months and scattered so that each subject had one session a week. At the conclusion of the training period, reading and intelligence tests were administered. An analysis of the data revealed that visual-tactual training had little or no measurable effect on the reading achievement of the pupils in the experimental group, but it did have some effect on mental maturity.

In 1965, Gorelick (*8*) investigated the effectiveness of visual form training in a prereading program with 69 beginning first grade students. Group A had visual discrimination training in abstract symbols; Group M, with meaningful symbols; the control group had no training. Post-tests on word recognition showed Group A significantly better than Group M, but neither group did significantly better on the test than the control group, which had no training in visual discrimination.

Werner, Simonian, and Smithe (*14*) in their 1967 study of reading achievement, language functioning, and perceptual-motor development of 10- and 11-year-olds, reported that the majority of children with reading problems had adequate Bender-Gestalt reproductions and concluded that inadequacy in language function rather than lack of perceptual-motor skills characterized most children with reading problems in the upper elementary grades.

The nine research studies described have not demonstrated any significant correlation between visual perceptual training or development and reading achievement. What do research studies tell us about the auditory modality and reading?

Dykstra (*5*) in 1965 examined the relationships between prereading measures of auditory discrimination and reading achievement at the end of the first year. Seven auditory discrimination subtests selected from published reading readiness tests were administered at the beginning of first grade, and two subtests of the Gates Primary Reading Test were given at the end of the school year. Complete data were gathered for 632 pupils. An analysis of the data revealed relatively low relationships between the auditory discrimination abilities as measured by the instruments used in this investigation and success in learning to read. He concluded that the use of auditory discrimination tests for diagnostic purposes was a dubious practice in the light of the low intercorrelations found among those tests designed to measure essentially the same skills. He suggested that experiments in equalizing the time spent in direct instruction in reading while varying the nature (but not the extent) of the training be instituted, a process which would then make it possible to be less ambiguous about the influence of auditory discrimination abilities on subsequent achievement in reading.

In 1966, Deutsch and Feldmann (*3*) investigated the relationship of auditory and reading skills in the retarded reader in the primary grades with the aim of ameliorating auditory deficiencies at that age. These investigators thought that the use of a special program for developmental training in auditory perceptual skills ought to provide a systematic framework for acquisition of skills related to reading, especially for the socially disadvantaged child who has been subjected to little organization in auditory skills.

Two studies were undertaken. In the first study, three treatment groups were organized to receive varying combinations of auditory and reading training: reading only, auditory only, and successive reading and auditory training. Sixty-four third graders from socially disadvantaged backgrounds were assigned to one of the groups or to the control group. In the second study, the treatment groups included reading only, successive reading and auditory treatment, and combined reading and auditory treatment. There were 34 retarded readers in the second study, divided among the treatment and control groups.

In both studies the children were taught in small groups for a five-month period. The auditory curriculum, as well as the auditory tests, was constructed for the studies.

The results of both studies did not support the hypothesis that a developmental auditory program would facilitate reading retraining for young retarded readers. These was no evidence that any one treatment group was superior to the other, or to the control group, in effecting improvement in reading. They conclude by stating that there was no support for the hypothesis that combinations of auditory and reading programs, as tested in the studies, were useful for retarded readers from socially disadvantaged backgrounds.

In her analysis of clinical studies in reading, Chall (*1*) wrote,

> In spite of the paucity of evidence of its effectiveness, many reading specialists are pinning their hopes on the training of perceptual deficits. There may be something in it, but I believe we must be cautious in accepting it as the new panacea. True, it is possible to train visual and auditory perception. But will it carry over to reading? Is it worth the time and effort involved? Is it better than good remedial instruction?

Chall suggests that the solution lies in more and better clinical research. Only then will we be able to answer the question originally raised: Visual and auditory modalities—how important are they?

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PROGRAMED INSTRUCTION is one of the new approaches to learning which we are hearing about at the present time. Perhaps some of the readers of this volume may wish to have a clear explanation of what programed instruction is and upon what principles it is based. Possibly others may want to become familiar with the research that has been carried on in connection with the use of programed materials in reading. All will be interested in finding out to what extent programed instruction is effective in teaching and learning situations. The three papers that follow offer worthwhile information in regard to all three of these facets of this subject.

How Effective Is Programed Instruction in Teaching Reading?

EDWARD FRY
Rutgers—The State University

> Glittering prizes are offered to those who introduce programmed instruction into educational and training situations. There has been no shortage of good reasons why programmed instructions must be, in principle, superior to conventional classroom instruction, and indeed, the first empirical studies in the (British) armed forces seemed to promise drastic improvements in learning rate. More recent work, however, has tended to indicate something nearer parity between programmed instruction on one hand and conventional classroom instruction on the other (*4*).

THIS QUOTATION from Duncan in 1965, speaking about the experiences of the British armed forces in the use of programed instruction, could fairly well be mirrored by reading teachers who have seriously investigated the use of programed instruction in the teaching of reading. It is not that programed instruction cannot teach; there is much evidence to the fact that it can. The difficulty is that teachers expect it to teach better than traditional or conventional methods, a task which it cannot do, at least with any degree of consistency. But before we go into the problem of effectiveness, let us review some of the principles of programed instruction which can also serve as a definition of what we are talking about.

Principles of programed instruction

Although there is something less than unanimous agreement on the principles involved in a programed instruction situation, here are some upon which many would agree (6):

1. The subject matter is broken up into small units called frames. In actual practice, these frames vary in size from a short sentence to several small paragraphs.
2. At least part of the frame requires some type of response from the student. He must answer a question or fill in a blank. Active participation on the part of the student is required. Generally, it is desired that the activity also should demonstrate understanding of the material.
3. The student is provided immediate feedback reinforcement. His being told the correctness of his answer has the advantage of immediately reinforcing the activity or immediately correcting a misunderstanding. Since many programs are written in such a way that the student is right a high percentage of the time, the act of telling the student that he is correct becomes a reward or reinforcement. Thus programs have a much higher amount of reward or reinforcement than most ordinary teaching situations.
4. The units are arranged in careful sequence. Because the subject matter is broken into small bits, the author must think carefully about the learning steps involved, and the result is a much better sequence of presentation. Careful sequence also embodies the notion of shaping or gradually leading the student toward the desired goals by rewarding him for activity that more and more closely approximates those goals.
5. Aiming the programs at specific goals has the desirable effect of making those involved in training evaluate their goals much more carefully and specifically.
6. Revisions are based on student responses. Because the student's behavior can be recorded for each frame, a knowledge of his understanding of each part of the lesson can be easily obtained. Thus, if a student is making many errors on one section, the program obviously is not teaching well and must

be revised. Here, then, is another cardinal principle of programing; namely, that the student is the final authority in determining whether the program is good. In traditional curriculum materials an "expert" often determines the final presentation, but in programing, the approach is more student centered. Programs based on experimentation and not on opinion, are also more carefully aimed at a particular ability-level of student.

7. The student is usually free to vary his own rate of learning. A student may work through a program rapidly or slowly. He is completely independent of others in the class. Traditional methods, such as lectures or motion pictures, force every student to proceed at the same rate, which might be too fast for some and too slow for others.

Programs are usually divided into two main types, depending on the kind of response demanded of the student. The constructed-response type of program requires the student to write an answer to a question put before him by the programer. The multiple-choice type of program requires the student to select one of a number of alternate answers to a given question. The constructed-response program asks the student to frame his own answer to an open-ended question: the multiple-choice programs ask for a choice among alternate answers. The former clearly depends more upon the student's ability to recall data; the latter, on the ability to recognize it.

There are two major techniques for programing sequences that are currently in wide use. In one case, the material is arranged in a single order sequence, and every student must proceed from the first through the last item. This type is known as *linear* programing. In other cases, when more than one sequence or route through the material is arranged, the student follows the sequence determined by his own answers. For example, a correct response to one question may lead down a route that skips several questions, while an incorrect reply produces a route on which each of these questions must be answered. This practice of providing alternate routes through the program is called *branching*.

Comparative research

If one were to search the literature to answer our question, "How effective is programed instruction in the teaching of reading?" he would be hard put to find much serious research bearing directly on this question. In fact, since this question remains pretty much unanswered, I think that the best thing to do is to go back to the presentation of the writer in the 1967 IRA Proceedings. In this presentation it was stated that the biggest and best controlled study on teaching of reading by programed instruction was done by Ruddell in one of the USOE first grade studies (*7, 14*). Ruddell was really interested in seeing if certain linguistic type supplements to both basal reading texts and programed reading books would aid in reading instruction, but he also included in his study groups of pupils in classrooms in which the Sheldon Basic Readers were used and other groups in classrooms in which the programed reading series by Sullivan and Associates was used. By looking at Table 1 we can see that there is really not much difference between reading achievement scores at the end of first grade in the two groups.

A small study was done by Bannatyne (*1*) in connection with the Word Blind Study for Dyslexic Children in London using linear programs to teach punctuation and time telling. These children were matched on the basis of age, sex, nonverbal ability, and reading age (the lowest reading age was 7.0). Bannatyne found that while both the teaching machine group and the orthodox teaching group gained significant knowledge, "it can be concluded that within the limits of this experiment, teaching machines teach second year junior children no better or worse than teachers in an orthodox teaching situation."

In a master thesis study done by Sigler (*15*) in 1967 an attempt was made to measure the growth in reading of 36 mildly remedial high school readers. After nine 45-minute sessions using the Lessons for Self Instruction Basic Skills, students had lost a tenth of a year in scores on the Gates Reading Survey between Form 1 and Form 2. This study is cited not to show that students go backwards using programed instruction but rather to show some of the methodological flaws and difficulties in trying to measure gains on programed instruction. In this study there was a short training time coupled with an insensitive instrument. The Gates Reading Survey is a good gross screening device, but with a range of third grade through tenth grade in 21 items of the comprehension test, one does not get much reliability.

When studies have been done in other subject matter areas in which the exact content has been programed and presented in text form, we often see little difference in results (*5*, *13*). The writer's paper at the 1967 IRA convention reported some summaries of other studies with positive and no-difference results (*7*). It is difficult to find studies with negative results as it ap-

Table 1

Programed Reading Compared With Basal Readers at the End of First Grade

(Data taken from Ruddell 1965)

Group Reading Test Means	*Buchanan Programed Reading*	*Sheldon Basic Readers*
Stanford Achievement Test		
Primary I (N = about 132 per cell)		
Grade Scores		
Paragraph Meaning	1.6	1.7
Word Reading	1.8	1.7*
Word Study Skills	1.7	1.7
Spelling	1.7	1.7
Individual Reading Test Means		
Raw Scores (N = about 44 per cell)		
Gilmore Oral Accuracy	16.6	17.7
Gilmore Oral Rate	46.8	51.8
Gates Word—Oral (Words not selected for phonic regularity)	11.8	10.8
Phonetically Regular Words Oral Reading Test	9.1	5.4*

*Ruddell found raw scores with statistically significant differences between means at .05 level.

pears that the investigators tend not to write up failures (assuming they are interested in the "experimental method"), but we have one near admission in a project done in the New York City Schools.

> Gotkin and others became involved with this population in 1963 in the Reading Improvement Project of the Center for Programmed Instruction. During the two years with this project, they wrote and tested programmed instruction lessons directed at teaching a number of skills designed to upgrade the reading ability and subject-matter vocabulary of seventh and eighth graders who were reading at the fourth grade level. In terms of the goals of the project they failed to produce a significant amount of programmed materials capable of modifying the critical aspects of the reading behavior of their target population (*9*).

Even though the effectiveness of programed instruction over conventional methods is yet to be demonstrated, there has been some interesting research on parts of the programed learning process. Gillooly (*8*) in 1968 has shown after a review of his own and other studies that if one expects to have the student learn to make constructed responses (the criterion task of writing the answer), then the student must be trained with a constructed-response-type program; but if the student is only expected to make a selection of multiple choices, then training on a multiple choice program is satisfactory. This superiority of constructed responses is particularly important in teaching of novel terms. Reading teachers might make use of this information by providing ample experiences of writing words in vocabulary lessons.

An historical view

What then keeps programed instruction alive? Part of the answer might be found in ancient dreams. Dale (*3*) in his article "Historical Setting of Programs" in the 1967 NSSE Yearbook, cites an interesting passage from Edward Thorndike written in 1912 giving us almost a prescription for programed books:

> Books could be written giving data, directions for experiments and problems with the data, and questions about the inferences. The students could be instructed to read each helping piece of information, sug-

> gest questions and the like only after he had spent a certain amount of time in trying to do for himself what he was directed to do . . . if by a miracle of mechanical ingenuity a book could be so arranged that only to him that had done what was directed on page 1, would page 2 become visible and so on. Much that now requires personal instruction could be managed by print.

Thorndike then went on to give a classic argument for automation: "A human being should not be wasted in doing what 40 sheets of paper or two phonographs could do." Dale then discussed the similarity between some modern programed instruction books and the catechism-type of question and answer books used by the ancient Greeks.

For anyone who has studied a history of education, it becomes harder and harder to see "new" ideas. The stress on clear educational objectives did not begin with Skinner or even Mager. A decade earlier, Bloom and Karathwhol were carrying the banner, and before them were Tyler and Charters. This notion of clarifying educational objectives also stretches back to the Greeks and probably before them if we had any literature on their pedagogy.

Programed instruction seems to have burst upon us in rela-

Table 2

Number of Entries in *Education Index*, 1959-1967*

Year	*Programed Teaching*	*Teaching Machines*	*Total*
July 1959- June 1961	51	79	130
July 1961- June 1963	321	119	440
July 1963- June 1965	313	29	342
July 1965- June 1967	186	46	232

*Adapted from Corey (2) and extended by Fry tively recent times, but it has had an uncertain and unsteady progress. Since Pressey first published his article in 1926, very few other works were done in the area of teaching machines or programed instruction, with the exception of a few of his students. The present cycle of activity began in 1954 with Skinner's article and interest in teaching machines, and programed learning seems to have reached some kind of peak about 1963.

Corey (2) in his 1967 NSSE article has given us a good index of activity by simply counting the number of entries in the *Educational Index* for two-year periods beginning in 1959. He carried his count through 1965, and the writer extended it for two more years. It was found by combining the two subject matter headings of programed teaching and teaching machines, that in 1959-1961 there were 130 articles. In a two-year period of 1961-1963 there were 440 articles. This number has steadily declined, and in the 1963-1965 period there were 342 articles; but during 1965-1967 the number had dropped to 232 (see Table 2). There was even a drop between the one-year period of 1965-1966 and 1966-1967. Corey found a similar curve in entries in the *Psychological Abstracts* with the peak year being 1964. The writer found a similar, though later, curve in the *Subject Guide to Books in Print,* U.S.A. issues of 1966 and 1967 (see Figure 1).

Figure 1. Number and date of publication of books on programed instruction from *Subject Guide to Books in Print* U.S.A., 1966 and 1967.*

YEAR	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1960**								
1961	X	X						
1962	X	X	X	X	X	X		
1963	X	X						
1964	X	X	X	X	X	X		
1965	X	X	X	X	X	X		
1966	X	X	X	X	X			
1967	X							

*These are books about programed instruction.

**No books listed prior to 1961.

The list of reading programed learning materials in *Textbooks in Print* showed no change between the years 1967 and 1968; there were eight series or individual programs (see Figure 2). A larger number of programs, many from small publishing houses, can be found in the *Programed Instruction Guide*, compiled by Northeastern University (*18*).

Figure 2. List of reading programed learning materials in *Textbooks in Print 1968**

1. Allen, R. V., and Claryce. "Language Experiences in Reading," Levels 1-3, Gr. K-3. EBE Corp., 1967.
2. Educational Development Corp. "By Myself Series" for Ginn Basic Readers. Ginn, 1963.
3. Bostwick, Gracecarol, and Miles Midloch. "Lessons for Self Instruction in Basic Skills." Cal Test/McGraw-Hill, 1964-1966.
4. Carroll, Luch. "Programed Phonics." Educational Publication, 1966.
5. Educational Development Corp. "Help yourself to Read, Write, and Spell." Ginn, 1966.
6. Glassman, J. "Programed Reading." Globe, 1966.
7. Loretan, Joseph O., and New York City Schools Staff. "Building Reading Power." Merrill, 1964.
8. Sullivan Associates. "Programed Reading Series," Gr. 1-3, Webster/McGraw-Hill, 1963-1965.

*Category 141 Readers and Category 142 Reading Skills Under Programed Learning. Materials show no increase or decrease from 1967. These are programed materials for students.

Yet with all of these articles, the lack of evidence about the effectiveness of programed instruction, particularly in the field of reading, is striking. Silberman (*16*) was able to write a whole chapter entitled, "Reading and Related Verbal Learning" in the NEA sponsored book *Teaching Machines and Programed Learning II* without getting down to the comparison or effectiveness problem. The National Society for the Study of Education put out an entire yearbook called *Programed Instruction* in 1967 which contains very little about the effectiveness of programed instruction and nothing about the effectiveness of reading instruction.

The 1968 NSSE Yearbook (*12*) published a volume on reading entitled *Innovation and Change in Reading Instruction* in which programed instruction was mentioned by the authors; none of them gave any data as to its effectiveness.

Publishers have some glowing testimonials and even quotes of small unpublished studies, but in the regular literature, there is very little reported in the way of studies. Perhaps it is unfair to expect this proof of programed instruction when we do not ask it of basal texts or supplementary instructional materials. But programed instruction was born in the psychological laboratories where testing is the order of the day, and somehow most of us had greater expectations for its empirical justification.

The use of programed instruction in industry

There is some evidence and a widespread feeling that programed instruction is used more widely in industry than in the public schools. As evidence of this position one need only look at the membership of The National Society of Programed Instruction (*11*), which is the major professional organization in the field, and the type of articles published in their journal. On the other hand, the Center for Programed Instruction, which was largely education-oriented, merged into Columbia Teachers College and has more or less disappeared. A similar loss of educational interest is reflected in the program and journal articles of the Division of Audiovisual Instruction of NEA.

The writer has done some thinking about the greater percentage of use of programed instruction and the greater continuation of use in industry as compared with use in the schools, and he would like to offer the following reasons:

1. *Training objectives are more limited and more specific.* An airline is interested in having certain employees know how to read the weather code symbols. In teaching about weather in school one does not know if he should stop at meteorology, physics, chemistry, industrial pollution, or ecological effects. Likewise, the school feels that it has done a great job if a student starts reading about weather and then goes on of his own accord to learn about the influence of the moon on tides. On

the other hand, industry thinks it has done a good training job if the employee learns the weather code quickly and gets back to work earning money for the company.

2. *Industry has no vested interest in the status quo.* If a school superintendent decided to place half his teachers into curriculum development and writing programs temporarily, this changeover would mean that the other half would be teaching twice as many children. This situation would undoubtedly mean immediate dismissal of the superintendent; yet a training director in industry could make this kind of decision on Wednesday and have it implemented on the following Monday.
3. *Industry typically has a much less stable student population.* The public school principal knows within a couple of percentage points how many students will be at what stage of development a year or two in advance. In industry, model changes, market fluctuation, and technological advances all contribute to short-term fluctuations. The training director may have 500 students attending classes one week and 1,000 the next. He may have some classes at 10:00 a.m. and some at 10:00 p.m. He may hold some classes for 25 employees at the home office and some for three students in Tulsa. In short, the flexibility to package up the training and ship it anywhere at any time for any amount of students is worth a lot more to industry than to the schools.
4. *Trained teaching personnel is much more available in the schools than in industry.* Even with long-term teacher shortages in the public schools, thre is a more readily available supply of trained personnel for public school teaching than any industry can muster. In industry, training is often done by supervisors who were trained primarily in work experience and who often view teaching as an unpleasant occasional necessity.

The writer does not wish to belabor the point of differences between industrial training and public schools, but a comparison does tend to answer the question of "Why is more programed instruction done in industry than in the schools?" It also points out the important "system" concept that any training method must be evaluated in the light of the total training situation; furthermore to ask simply, "Does A teach better than B?" must be modified by a whole succession of qualifications like who? when? and where?

The evaluation problem

The whole problem of evaluation of curriculum materials or teaching methods is extremely important. Probably the best model of critical evaluation comes from the testing field where every published test is critically reviewed by experts in the field in Buros' *Mental Measurements Yearbooks*. But even this, as valuable as it is, falls short of empirical validation or comparison. In other words, the experts look at the tests and the manuals and make judgments based on experience or knowledge of testing. It would be more valuable if they or several independent sources did an item analysis, comparative validations and other statistical verification based on actual administration of the test to specific populations.

Those in the reading field recently saw a major effort at comparative evaluation in the USOE sponsored first grade studies in which 27 independent investigators tried out two or more methods of teaching beginning reading on moderately large populations, using the same reading tests as achievement measures. The Ruddell study mentioned earlier was the only one of these to use programed instruction. It is fervently hoped that when money for educational research is again available, that not only will the first grade studies be replicated, refined, and extended but upper levels of reading instruction will be investigated in the same controlled, objective manner.

Many members of the American Educational Research Association have long been concerned with comparative evaluation of teaching methods and materials. At their recent conference, February 1968, a major symposium was devoted to this topic. Louise Tyler (*17*) presented a set of "Recommendations for Curriculum and Instruction Materials" which grew out of an ongoing project at the University of California at Los Angeles.

These recommendations had much to say that bears on objective evaluation, not the least of which is the calling on publishers to produce a manual similar to a test manual which specifies not only objectives but evaluation procedures. A sampling of the recommendations made in the Tyler report is presented:

> E2 Manuals should clearly distinguish between kinds of evidence presented about effectiveness
>
> a) internal evidence
> b) external evidence
>
> Internal refers to features that can be revealed through visual inspection of study of materials. External refers to tryouts, revisions, etc.
>
> E4 Effectiveness of programs should be reported in terms of program objectives as well as unintended outcomes.
>
> E5 Curriculum and instruction materials should be evaluated in relation to different types of students, e.g., intellectual level, sex, age, socioeconomic.

These lofty requests call to mind the efforts of the AERA-APA-DAVI Joint Committee on Programed Instruction and Teaching Machines which issued the *Recommendations for Reporting the Effectiveness of Programed Instruction Materials* (10). These recommendations, like Tyler's, are essentially what the educational researchers and the better informed curriculum consumers would like to have. However, no publisher has even come close to meeting the requests for the type of manual called for by either group. Perhaps someday professional organizations such as IRA can arouse their respective memberships into demanding that publishers produce such manuals to accompany instructional materials or else they will refuse to purchase them. It is a little unrealistic to expect publishers to start publishing these expensive manuals if they do not have to or, one might better add, if nobody is willing to pay for them.

Conclusion

In returning to the original topic, "How effective is programed instruction in teaching reading?", the writer is reminded of an incident which occurred several years ago in which he and a prominent educator were discussing a report on educational television. The educator said after looking at numerous tables and graphs, "Well, TV's no more effective than an ordinary classroom teacher." He could have even justified the statement by saying there is no statistically significant difference between children taught by a teacher and those taught by instructional television. The significance, however, was not of the .01 or the .05 nature; it had, rather, an entirely different sort of significance in which, with educational television, we have one teacher teaching a hundred thousand children as opposed to the ordinary classroom teacher who teaches 30.

Now to express some personal opinions: The writer is not proposing that programed instruction is here to replace teachers, but we do have numerous studies which show that it does teach some things as well as a teacher, a fact which means that the teacher could then be freed to do something else. For example, programed instruction may do a part of the instruction while the teacher diagnoses a weakness or motivates an underachiever.

The writer cannot believe that a method which incorporates such important goals as specifying objectives, allowing for individual differences in learning rate, allowing for great diversity of subject matter being taught (even if the teacher does not know the subject matter), and provides for student interest through a variety of instructional techniques is going to be allowed to fade away completely. In fact, there is evidence that programed instruction is being incorporated into the new supernova of computer-assisted instruction, and the minor novas of individually prescribed instruction and the systems approach.

The writer expects that in a few years someone will be able to do an *Education Index* count of articles and show a rise and decline for CAI. But in the meantime, one of the units that is rapidly becoming a staple in the teacher's bag of tricks is programed instruction. The writer personally has learned a lot about teaching from studying teaching machines and programed instruction. It has greatly influenced his thinking and outlook and he hopes in some small way all of this plethora of article-writing activity has somehow helped the classroom teacher to do a better job with her children.

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Pro-Challenger: DOUGLAS G. ELLSON

Indiana University

AS AN INTRODUCTION to this paper, the writer can say that he is, in general, favorably inclined toward the use of programed instruction. He believes that programed instruction can not only play a significant part in the teaching of reading but, in fact, is already doing so.

As a beginning, several studies will be summarized which provide some of the most obviously favorable evidence. All of these are full-scale studies, not laboratory miniatures. "Full scale" as used here means that these studies involve teaching over a period of weeks at a minimum, and the studies are designed to teach what is ordinarily included in the semester's curriculum or a substantial portion of it. In each case the educational significance as well as the statistical significance of the results has been considered. The earliest report which met these requirements was published in 1962, so it is evident that all of these studies are fairly recent. They will be reported in chronological order.

The first study to be summarized is one mentioned by Fry (4) in IRA's publication *A Decade of Innovations.* This was Ruddell's study, one of the first grade studies sponsored by the U. S. Office of Education.

In this study, 132 children in six classrooms were taught with the Buchanan Programed Reading Series and a comparable group was taught with the Sheldon Basic Reader Series. Eight performance measures were obtained at the end of the school year: four were Stanford Achievement subtest scores, which Fry converted to grade equivalents; and four were oral reading tests, devised by Gates and Gilmore. Two of the eight differences between the programed and classroom groups were statistically significant. Both favored the programed method. On the Word Reading subtest of the Stanford, the mean for the programed group at the end of the year was 1.8 and that for the basal reader group, 1.7. As Fry points out, although this difference is statistically significant, the educational significance of a one month difference may be questioned. However, on the second measure, a test of oral reading of phonetically regular words, the mean score for the programed group was 9.1 and for the basal reader group, 5.4. This difference, which is statistically significant, represents a gain for the programed group which is 90 percent greater than that for the basal reader group.

A second study, or pair of studies, reported by Bernstein (*1*) compared a programed form of Woolman's Progressive Choice method with conventional teaching using basal readers. Results were obtained for 98 mentally retarded children and an equal number of controls. Performance after one year of teaching was evaluated with a special form of the Metropolitan Achievement Test designed for handicapped children. The mean score of the educable group given programed instruction was 67 percent higher than the mean for the control group taught with conventional basal reader procedures. For the trainable children the mean score for the programed group was over 2½ times that for the basal reader group.

A third set of studies is taken from the writer's own work (*2, 3*) in which programed tutoring was used as a supplement to conventional teaching. In programed tutoring both the teaching materials and the teaching activities of nonprofessional tutors are programed. In two studies in successive years, the effectiveness of conventional teaching alone was compared with that of a combination of programed tutoring and conventional teaching. In these studies, a total of 120 first graders in inner-city schools were tutored, and their performance was compared with that of matched controls. The results of both studies were very similar: the reading achievement of the tutored groups was significantly greater than that of the control groups taught by conventional procedures alone, and in both studies the slower readers benefited most from the programed procedure. On Ginn Achievement Tests, children in the lowest quartile of the tutored group answered approximately 72 percent more items correctly than those in the lowest quartile of the untutored group. The difference for the upper quartile was only 6 percent.

These results seem to fit a general pattern. In the teaching of reading, programed instruction appears to be more effective at the lower end of the ability scale. In the preceding study, the lower quartile of the inner-city group benefited most. In Bernstein's study, if you remember, the gains were much greater for the trainable than for the educable group. In one sense, this outcome may be considered as a limitation on the applicability of programed instruction. On the other hand, it is the below-average child who presents the most difficult problem in classroom teaching.

A fourth set of data was reported by Malpass (5, 6), and his colleagues. This report was based on two studies in which programed and standard classroom methods were compared, using matched groups of mildly mentally retarded children with CA's between 10 and 20. One study was made in an institutional setting; the other, in public schools. In both types of school, two programed procedures, one based on multiple choice items and the other using a special typewriter keyboard as a teaching machine, were compared with conventional teaching procedures. Programed instruction was given to each child for 15 to 20 minutes per day for eight weeks. Performance for all groups was measured by pre- and post-tests of oral reading. The tests contained 72 words which had been taught with the programs and an additional 28 words which had not.

The results for both programed and unprogramed words strongly favored the programed technique both in the institution and in the public schools. In the public school study, the gain in number of programed words read for the group taught with the multiple choice program was over five times the gain for the classroom group. For the group taught with the keyboard program, the ratio was 7 to 1. For children in the institution, scores for the groups taught by programed instruction were 9 and 13 times the scores for those taught in the classroom.

In each of the studies reported so far, the results include at least one measure of reading achievement in which the performance of a group taught by programed instruction is significantly better than that of a comparable group taught with conventional classroom methods. And in each case the balance in favor of programed instruction is large enough in the writer's opinion to have educational significance. Together they provide rather impressive evidence that the technique of programed instruction can teach at least as effectively, and sometimes more effectively, than the classroom teacher.

There is also evidence of the value of programed instruction for remedial purposes. For example, Smith (7, 8) reports gains of 16 to 25 months in reading achievement for five clinical cases, after less than three months of work with the Michigan Language Program.

A somewhat different point of view will now be presented. In several of the studies just reviewed, some of the differences between classroom and programed groups were not statistically significant; and some, though statistically significant, were very small in absolute terms. In Ruddell's study, for example, differences for six of his eight measures of achievement were not statistically significant and one of the significant differences was very small. Blackman and Capobianco have reported a major study with retarded children in which no significant differences were found between a group of 20 retarded children given a year of programed instruction and a matched group given classroom instruction.

Comparisons such as these, in which differences in performance between groups taught by conventional instruction and programed instruction are small or not statistically significant, are ordinarily said to have no educational significance. This conclusion is usually based on a summary of results such as the following: "Results of this study showed the programed instruction was no better than classroom instruction." It is suggested that such data can also quite properly be interpreted as follows: "Results of this study showed that classroom instruction was no better than programed instruction." A conclusion in this form has very great educational significance, especially for those who favor conventional methods and have a low opinion of programed instruction. We may hope that it will provide a real challenge to conventional teaching methods and that it will lead to the refinement of existing methods, to the development of new ones, and to evaluative and basic research which in the long run can only result in the improvement of classroom as well as programed teaching.

Up to this point this paper has been primarily concerned with evaluations of programed instruction in terms of reading achievement. Although this consideration is a most important one, it is not the only one. There may be other benefits. Blackman and Capobianco, for example, who found no difference in the achievement of their classroom and programed groups, did find statistically significant improvement in a measure of behavior stability for the children taught by the programed method. This statistical evidence of effects extending beyond the teaching situation lends support to several incidental observations made during the writer's own work with programed tutoring. In a number of cases, teachers in the public schools, attendants, and other personnel in an institution for retarded children told us of very noticeable improvement in adjustment, reduction of hostility, and so on, which occurred shortly after programed tutoring was begun. While this reasoning is admittedly speculative, we would like to attribute these changes to certain features of programed tutoring, most of which are characteristic of programed instruction in general. The children were taught individually so that each could progress at his own rate. Progress was more obvious to the child since he was required to learn actively and his successes were consistently and immediately emphasized by reinforcement. Failures were de-emphasized, and competition with other children was effectively eliminated. In programed instruction each child competes only with himself. These conditions are difficult to achieve in the classroom where the teacher necessarily works with groups.

This matter suggests another desirable characteristic of programed instruction. It can be used to relieve the teaching load of the professional teacher and to supplement and extend her work. The elementary teacher typically works with one group of children at a time. Insofar as programed instruction is an effective self-instructional method it can be used to teach the remaining children while she is working with a group. Necessary supervision can be provided by nonprofessional assistants. Whether programed instruction can replace the teacher (and the writer does not believe that it can or should or ever will), it *can* be used to relieve her of some more tiresome parts of her job and free her for more creative things. There are some who say, "Any teacher who can be replaced by a machine, ought to be." This saying might be paraphrased thus: "Any part of the teaching function which can be done just as effectively by machines, ought to be."

Another value of programed instruction is its contribution or potential contribution to educational research. To quote from Stolurow (9):

> The main staying quality of programed instruction that will be recognized more and more is its capability of controlling conditions which heretofore it was not possible to control. With programed instruction and machines, it is possible to be quite explicit about either a method or a teaching sequence. Added to this advantage is that of reproducibility of the conditions. They make it possible to study teaching itself in a way that we could not do in the past. . . .
>
> This leads to the . . . prediction that the teaching machine will contribute to a theory of teaching. As a research laboratory, the teaching machine has the potentiality of providing the necessary controls for studying variables of teaching strategies, and so I predict that we will see one or more theories of teaching emerge in the near future with reliable and valid data to support them.

What Stolurow says about teaching machines might well be extended to the broader concept of programed instruction, which does not necessarily involve machines or even programed texts. We might also add that not only does programed instruction provide precise control over teaching conditions, it can provide much detailed information about the learning process and about the learning individual which is useful both for scientific and for teaching purposes. This matter is especially apparent in the programed tutoring with which the writer has been associated. A tutor working 15 minutes a day with one child gains much information about him which is not easily accessible to the classroom teacher.

To summarize the belief of the writer, there is increasing evidence that programed instruction can make a significant contribution to education. This evidence includes the results of comparative studies which indicate that under some conditions reading achievement benefits more from programed instruction than from classroom instruction and that under other conditions programed instruction is no less effective than conventional instruction. It has remedial value, it can provide an effective means of relieving the overloaded classroom teacher, and it is a useful tool for research aimed at understanding and improving teaching procedures.

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Con-Challenger: CHARLES J. TURNER
Glassboro State College

PREPARATION for this topic was begun by consulting the *Education Index* under "Reading-Programed Teaching." There are 21 articles listed in the yearly volumes starting with July 1963, when this subhead was introduced, and continuing until March 1968. These articles and the literature they referred to suggested two conclusions:

1. Unfortunately, there is very little solid research on this topic that would enable us to determine how effectively reading may be taught by programed instruction. (Hereafter, programed instruction will be referred to as PI for the sake of brevity.)

2. Therefore, it would be a better use of your time for me to analyze the literature that points up two major dangers that bear on how effectively PI may teach anything at all, reading included.

For these reasons, this discussion will consider two major dangers of programed instruction as pointed out in literature:

1. PI is said to be good because only PI can maximize four principles considered to be helpful in learning. But there is much research evidence that not one of these four principles is really necessary.
2. There is grave doubt that wider use of PI could result in better education. In other words, what PI does best is not what we mean by real education.

For an introduction to the major discussion, we shall give a quotation from Pressey who is generally regarded as the father of the teaching machine movement. When the "father" of a movement becomes critical of it, it is really time for all of us to worry. In a recent article, Pressey (*14*) wrote a plea to guard against the dangers inherent in PI, requesting "the whole situation be soon given most critical inspection, and not merely to assure (as is now being attempted) that programs are good; but critically to consider whether the whole current concept of programing may be at fault." Pressey claims that it is a false premise to consider that important factors concerning human learning will be found by experimenting with animals. He would like to enhance the differences between men and animals and to concentrate, if possible, on the kinds of learning that would be impossible even for apes. Instead of this laudable effort, Pressey believes that the current animal derived procedures destroy meaningful structure by presenting fragments serially in programs. According to Pressey, instead of stressing the processes of cognitive clarification, they stress literal learnings by rote reinforcement.

Another introductory item: There is no intention here to examine the research that has already been quoted to show whether programed or live instruction is "better" in certain situations for two reasons: 1) the major objections to PI lie elsewhere and 2) important people in the field of PI, such as Stolurow (*20*), believe that research studies that attempt to compare programed with live instruction are, at best, premature and that we have only the vaguest of notions about these two very complex phenomena that we are trying to compare.

The major dangers of PI have been best pointed out in articles by Arnstine (*1*), Epperson and Schmuck (*3*), Feldhusen (*5*), Fitzgerald (*7*), Frey (*8*), Smith (*18*), and Spache (*19*). Many of the points made in the rest of this paper may also be found in one or more of these articles.

Are the principles of PI necessary for learning?

Let us turn now to the first major danger: that we have been led to believe PI is necessary because it maximizes four principles essential for learning. Several authorities, including Kingston and Wash (*10*), have listed these four principles. The plan here is to name each principle, list a number of research articles that can be cited to indicate that the principle is not necessary for learning, and briefly discuss the research.

Self-pacing. What programers probably mean by this principle is that they allow time for the student to answer correctly all the items in their programs. However, this work does not have to be of value to educators unless what we mean by education is the responding correctly to all items. Also, a research article by Feldhusen and Birt (*6*) indicates no decrease in learning when self-pacing was eliminated by presentation to a group at a uniform rate.

Overt response. There are indications from recent studies that programs allowing no active participation at all are just as effective as programs insisting on active responses. Students were required to read programs in which all blanks had already been filled in. They learned as much as, and took less time than, control groups that were actively responding to each question. This result should not be surprising. The special issue on PI of *The Journal of Educational Research* for June-July 1962 is recommended as a reference. This issue contains five articles supporting this point. These articles were written by Evans and others (*4*), Feldhusen and Birt (*6*), Lambert and others (*11*), McDonald and Allen (*12*), and Stolurow and Walker (*21*). In addition, Roe and others (*16*) have written another article that might be cited.

Immediate confirmation. While working with programs, students fill in blanks, and after each blank they check to see if they were right. PI assumes that such students should obviously learn more than a group of students who were not able to get immediate confirmation after each answer. However, research shows that this result is not obvious. When the researchers themselves filled in the blanks in programs and the only thing the students had to do was to read the blanks, thus getting no confirmation at all of the actions that they had taken, the students learned as much as a comparable group who followed the more usual programing procedure. Other researchers have either removed or reduced feedback with similar results. Articles that can be cited as supporting these statements have been published by Feldhusen and Birt (*6*), McDonald and Allen (*12*), Moore and Smith (*13*), and Roe and others (*16*).

Small steps. One article by Crowder (*2*) may be cited to show that the steps in a program need not be small but can be as large as a paragraph with no decrease in learning.

To summarize, it has been assumed that PI is valuable because only PI is able to maximize learning by having students receive immediate confirmation of their own active responses to a sequence of small step items which they may learn at their own rate. Research questions each of these principles.

There seems to be only one more question left to be investigated: what if one changed programs into narrative paragraphs with no response, no confirmation, none of the principles of PI? Would children learn as well? The answer is "yes" if two articles may be trusted, one by Feldhusen and Birt (*6*), the other by Silberman and others (*17*).

Does PI contribute to the major purposes of education?

Let us now turn to the second major problem: even if we can get students to do the previously mentioned four things efficiently, what has all this matter to do with what we mean by education? In other words, even if, for the sake of argument, we were to grant the efficiency of the principles of programing, do we want what we may easily get if programing becomes more and more prominent? In other words, some philosophical questions need to be raised.

Here is an example which will lead into the subject. We know that when Robert McNamara was Secretary of Defense, he did a great deal toward researching various effective ways of accomplishing many of the purposes of war. He researched the cost effectiveness of several different ways of accomplishing the same war objective. His computers no doubt had told him in what situations it was more efficient to use napalm on opposing troops, or to bomb them from the air, or to attack them with mortars and shells. But the really important issue that is becoming more and more apparent in America is not to find the most efficient of several different methods of applying force to North Vietnam but to determine how much total force we ought to be prepared to supply and if, indeed, we should continue to apply any force at all. In the same way, we can raise the question of whether the most efficient way of getting children to do what they do when they are working in programs is what we really want them to get out of education. If we answer "No, it is not," then we realize the second danger.

This philosophical danger is increasing because there are many forces trying to prove to us that certain programs constitute one of the educational answers we are seeking. One danger is illustrated in the situation following: the writer knows of a school in which one summer the principal arbitrarily made the decision that a fairly untried method of PI would be the only method of reading taught in the first three grades in his school. He did not discuss this change with people in reading who were available to consult with him. He looked only at the "research" that the salesman showed to him. And yet, he made this decision which is now affecting the reading abilities of quite a number of children within the surrounding area. This points to the common situation in which not only principals, but superintendents and boards of education are eager to try something new (in fact, almost anything new) in an attempt to show the public that they are doing something different in the criticized area of reading instruction.

Programing is claimed to be a useful adjunct to the teaching that the school does. This adjunct, however, may become the activity around which many other educational procedures will be forced to revolve. One historical comparison that can be given has to do with the introduction of cheaply printed books. When teachers first used these books, they thought that they were useful additions to the teaching process; but before long education was defined in the minds of many as the *process* by which children learn from books. The process, rather than the books, had become the controlling factor in education.

One part of the philosophical danger comes from objectives. Programers believe that once the educational objectives have been very explicitly stated, the programs will enable the children to achieve the objectives. These objectives are almost always spelled out as the acquisition of some knowledge.

There seem to be two main questions about the last two statements: 1) Are the main objectives of democratic schools capable of such explicit statement? and 2) Does the acquisition of knowledge, which is the main and only objective of PI, also happen to be the main objective of the schools?

Now let us examine several points related to democratic schools:

1. The necessity to state goals before the program is even written, rules out teacher-pupil planning.

2. This explicit stating of objectives assumes that the purpose of education is to "design and shape human software to the needs of society." This approach seems appropriate for totalitarian societies but not for democratic ones.

3. Many believe that the preservation of our society rests upon the ability of its citizens to remain flexible and open. Therefore, their education must prepare them to be flexible and open, qualities that programed materials do not have and cannot teach.

4. One writer on programing stated that, "Courses of study and curriculum guides of the future will contain fewer references to vague goals of appreciation and good citizenship." Unless programers would say that our schools' products should not be good citizens and should not appreciate cultural values, how would they explicitly state their objectives? Perhaps instead of good citizenship they would list goals such as the student "subscribes to a newspaper, throws litter in garbage cans, and votes in all elections." It is obviously impossible to make a complete list of such observable phenomena and call this list the goals of education. Nonexplicit goals are necessary because, if they are not nonexplicit, we shall define a goal such as citizenship as if only one certain set of behaviors would define it.

Next, let us consider the matter of acquisition of knowledge. Some of us believe this statement: "People acquire knowledge when they need it to solve a problem they believe they need to solve. Afterwards, they normally forget this temporarily acquired knowledge." Thus, even if the goal of acquisition of specific knowledge is accepted, the goals of PI may easily turn out to be empty.

Consider this quote from Grannis (9):

> We are accustomed to thinking of content as the most important learning a school conveys to its students. It is the structure of the school, however, that instructs most systematically, and it is his structure that the students respond to first and remember longest.

At the same time the student is acquiring these knowledges from PI, we believe that he is also learning certain social attitudes, learning habitual ways of responding to questions, and learning submission to authority. All these other learnings that are not part of the programer's purpose are called incidental or concomitant learnings. These incidental learnings contribute to the formation of character and have far more transfer value than do the bits of information that the programer selected. It has been suggested that the incidental learning acquired from the exposure to PI contributes directly to the formation of a personality that can be labeled authoritarian.

Do you believe that most of the values that our society holds dear—such as cooperation, courage, aesthetic taste—are learned from other people? PI tends to remove a student from the influence of other people, such as teachers and other students engaged in the same work.

As Arnstine has summarized, "The more programed learning is utilized, the less opportunity will the schools have for inculcating positive social values, and the more our students are likely to become standardized and submissive to authority. If its narrowly stated objectives are achieved, students will be left with the questionable benefit of acquiring large bodies of information they will seldom use and soon forget."

Do you believe that man is infinitely variable? If you do, you will have trouble squaring this belief with the fact that PI believes that there are no interpersonal variables that are important enough to be taken into account. The only variable that is allowed is that some students can take bigger steps than other students.

Do you believe that students should be involved with real life situations? that involvement with the changing environment is necessary? and that learning suffers insofar as it is separated from that to which it is to be applied? If so, you will have trouble squaring these beliefs with PI in which learning is limited to a certain position in a classroom with a programed book or teaching machine in front of the student. Surely not much of the learning will be applied in a real life situation where the student is seated before a teaching machine or at a desk with a programed book open before him.

Do you believe that knowledge is a dynamic reality, continuously being modified? If so, there is a strong possibility that most of that which is remembered from a PI situation will not be used because it will be out of date by the time the learner wants to put it to use.

Do you believe that there should be a truly creative partnership between teacher and learner? between different age groups, the younger and the older? If so, you will have difficulty squaring this belief with what programed learning accomplishes.

Do you believe that school learning should not consist merely of exercises in rote memory and drill? If you do, you will realize that an increased use of PI means an increase in memory and drill.

The writer would like to close with a quote from Fitzgerald (*7*):

> There are many, I know, who do not experience any distaste in living among and through machines, just as there are many who feel perfectly at home with plastic furniture, synthetic flavored food, and tranquilized affect; and to such as those, of course, these remarks will have little relevance, except as an opportunity for an ascription of questionable motives. Such is the temper of the times! Nevertheless, I find the thought of millions of children spending hours each day with millions of machines in millions of separate cubicles an appalling prospect.
>
> Perhaps an analogy will explain. One may compare the merits of paper roses with real roses, but all the good arguments, all the advantages—economy, durability, accuracy, availability, habituation, and relativity of taste—are on the side of paper roses. There's not much one can say in favor of a live rose, except to assert lamely, naively, that it is true, that it does not betray. And any good dialectician has a ready answer for that kind of romantic subjectivity. There is not much one can say for learning from a live teacher either, considering all his imperfections, or for learning in the company of other live students, considering the distractions of their greater imperfections. One can merely suggest, hope for the occasional nuances, the sparks, the candor, the possibility of learning humanity from humans.

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TO SOME the Augmented Roman Alphabet appears to have been a novelty that burst into our midst in the 1960's. As a matter of fact, augmented alphabets have been with us for five centuries. In 1570 John Hart published such an alphabet and used it in teaching children to read. Several other alphabets of this type have been developed and used in teaching reading to children at intervals throughout the years. None, however, has captured the fancy of the public and the interest of reading teachers to the extent that Pitman's Augmented Roman Alphabet (Initial Teaching Alphabet) has done. Like other innovations, this alphabet has its staunch advocates and those who question its effectiveness. It is appropriate that papers on this widely discussed topic should appear in this volume on "Current Issues in Reading."

How Effective Is i.t.a. in Reading Instruction?

MILDRED A. DAWSON
Sacramento State College

THIS PAPER deals with the effectiveness of i.t.a. for beginning reading instruction. Since the experimentation with the use of i.t.a. in classrooms did not begin until September 1961, it should be apparent that studies going on less than seven years cannot yet have proved in certainty the relative effectiveness of i.t.a. in reading instruction. Come back to the IRA convention ten years from now. By that time, the chances are excellent that careful experimentation will have proved in all certainty whether i.t.a. is as effective as other systems of printed words which beginning readers are trying to learn.

What is i.t.a.

Let us make it clear from the outset that i.t.a. is *not* a method of instruction, as is the language experience approach. Each teacher using i.t.a. materials is free to use any single preferred method or an eclectic method of her choice, since i.t.a. is an alphabet as the title "initial teaching alphabet" indicates. From the traditional alphabet of 26 letters, Pitman, the originator of i.t.a., selected 24 letters—all but *q* and *x*—and added 20 new characters to make an augmented alphabet of 44 characters, each of which is intended to symbolize a single sound, or phoneme. All i.t.a. characters are in lower case, there being no special characters to indicate capital letters as in the traditional alphabet. Where traditional English usage would require a capital letter, the i.t.a. lowercase character would be enlarged. Thus the child has only 44 characters to learn in i.t.a. for reading and spelling purposes, whereas there are at least 52, and probably 70 or more, to learn when traditional alphabet letters are used.

The English language is known to have forty-odd sounds. The i.t.a. system symbolizes all of these, with some duplications (as *c* and *k*) to total 44 characters. Pitman suspected that children have trouble learning to read words printed or written in traditional orthography since there are about 2,200 ways to symbolize the forty-odd sounds of the English language. To illustrate, consider how the sound of long *i* is symbolized by a letter or group of letters in words lik *aisle, height, geyser, eye, child, file, indict, lie, sign, choir, guide, by,* and *style.* On the contrary, the long *i* sound in i.t.a. is symbolized by only one character.

Pitman does not claim that i.t.a. is an absolutely consistent and complete phonic alphabet. He was not interested in devising an augmented alphabet as such but in working out a code that would enable a child to figure out any word he sees, a code that would simplify the task of learning to read. Because of this interest, his concern was in devising a system that would result in the reconstructed words' looking as nearly like those in t.o. (traditional orthography) as possible. So he made departures from a truly phonemic system; for instance, both *t's* are retained in *better,* and *back* is spelled *b-a-c-k,* even though one *t* in *better* is not sounded and the *c* in *back* is redundant. This concession is made so that the i.t.a. versions of the words will look like the t.o. versions to be read later.

British and American experimentations

Late in 1960 Downing was invited to design and conduct experimental research to determine the effects of using i.t.a. for teaching beginners to read. Evidence on two essential questions were sought:

1. Is the traditional alphabet and spelling of English an important cause of failure in beginning reading?
2. Can children transfer their reading skill from a simplified beginner's system to the conventional one, and if so, is the *final quality* of the reading *in the traditional alphabet and spelling* significantly superior to that obtained without the intervention of a special beginning reading alphabet (6: 191)?

The details of the research design and the statistical findings obtained in the studies about i.t.a. are too intricate and numerous to include in this paper. Persons interested in the details may consult the references cited in this paper or read the recently published report, *Evaluating the Initial Teaching Alphabet*, published by Cassell of London.

Briefly speaking, there were experimental and control groups, involving hundreds of children, who were carefully matched on several essential bases. Both sets of classes used the same reading series, *Janet and John*, which was widely used in Britain. The books were transliterated into i.t.a. for the experimental classes. To match the library facilities in the control classrooms, library books in i.t.a. were provided for the experimental classes. The experiment was deliberately designed to negate the Hawthorne Effect which plagues so much research; that is, the effect on experimental groups when they know they are being observed and measured as they work with materials and learning activities different from the usual. As a rule, the Hawthorne Effect stimulates and motivates the subjects involved in experimental situations far beyond the motivation felt by control groups which are doing the usual thing. It is maintained that experimenters nearly always get results favorable to the new and different which the experimental groups are trying out, and the Hawthorne Effect is a big factor in this. To overcome such a complication, the i.t.a. experimental research design provided workshops, research meetings, and school visits for the control situations as well as the experimental ones.

By April 1, 1963—a year-and-a-half after the inception of the experiment—the following tentative conclusions were reached for groups using i.t.a.:

> Young children get through their beginning reading program faster.
> They can recognize more words in print.
> They can accurately read continuous English prose more readily.
> They can comprehend more continous English in print.
> They can read faster (6: 198).

Keep in mind that these strongly favorable conclusions about the benefits of using i.t.a. were said to be tentative, and tentative they were. The experiment had gone on less than two years, and there could be no assessment of the residual effects of using i.t.a. on children in their later school years. It should be said that Downing has consistently warned against uncritical acceptance of i.t.a. as the panacea for reading difficulties and against the wholesale adoption of i.t.a. as the basic type of material to be used in beginning reading. From the first, he stated that a period of ten to fifteen years would be needed for careful experimentation before we can know for sure what the relative merits of i.t.a. are. Studies must be longitudinal.

Moreover, the design of this early experiment and the situations arising in carrying it out have been criticized. Southgate, for instance, maintained that several factors other than the difference between i.t.a. and t.o. media of instruction might have accounted for the superior results gained through using the former. The experimental classes had new readers and library books and possibly were given more instruction in phonics because of the phonemic character of the reading materials, whereas the control books had the good, old *Janet and John* reading series and possibly much-used library books. (The research design permitted all the teachers to use methods of their choice, and it was assumed that all would be using those currently common in Britain. Since i.t.a. is not a method of teaching but a system of writing or printing words, teachers were to use the method(s) comfortable and preferable to them personally.) Besides, the experimental teachers had to have a workshop in which they learned the i.t.a. system, and Southgate believed that the corresponding meetings with control teachers were perhaps lesser in amount and in interest. A still stronger influence, she stated, was a "reading drive" felt by the experimental teachers because of the great publicity given by TV, newspapers, and other public media so that the importance of i.t.a. was impressed on parents, teachers, children, and the general public. Too, there was a swarm of visitors visiting the i.t.a. classes. Thus came the reading drive with its strong motivation and possibly greater effort on the part of the experimental teachers and pupils. Personally the writer has wondered if the more enterprising and creative teachers were the ones to volunteer to learn a new medium and experiment with it.

Subsequently, some of these possibly influential factors were better controlled. Publicity and visitation were kept to a minimum. In one phase of the experimentation, the same teachers taught i.t.a. and t.o. books on alternate half days. Under these circumstances, the results continued to favor i.t.a., but to a lesser degree.

Let us turn to later reports of the British experimentation. In his address at the 1967 IRA Convention in Seattle, Downing presented conclusions and recommendations available at that time. (This report is now available in the IRA pamphlet *A Decade of Innovations: Approaches to Beginning Reading.*) The conclusions are quoted exactly from his paper. The accompanying discussion is summarized as objectively as possible.

> 1. As an example of a transitional writing-system for beginning reading and writing in English, i.t.a. generally produces superior results in t.o. reading by the end of the third year in school.

The superiority is especially evident in the area of word recognition, and pupils who are the highest achievers in school gain the most. Slow-learning children show some improvement by the end of the third year; "but the poorest ten percent show negligible improvement in test results." (And are we not seeking something to help these lowest-ability children learn to read with greater ease and competence?) The need for a ten-to-fifteen-year research is reflected in the following statement: "It should be recognized that it is still uncertain how ultimate levels of t.o. reading skills and related attainments are affected by beginning with i.t.a., since the research has not yet followed the children into the later stages of education."

> 2. The success of i.t.a. in improving t.o. literacy skills occurs in spite of an important setback in the growth of these basic skills at the stage of transition from i.t.a. to t.o.

The teachers of i.t.a. materials felt that the transition occurred imperceptibly and smoothly; but reading tests given to their pupils in the middle of the second year and at the start of the third year of the experiment revealed that the children scored lower in reading skills than they did prior to the transition. So these recommendations were made:

> The use of i.t.a. requires a longer course than is often contemplated. Certainly for the slow learners, at least, it needs to extend into the junior school (i.e., at least three years of i.t.a. are needed for such children).
>
> A series of experiments in an experimental psychology laboratory should now be conducted either to shape i.t.a. for this transitional purpose or to produce an entirely new system.

It should be noted that Downing has maintained from the beginning that i.t.a. is only one of several possible ways of easing the difficulties of learning to read English. For instance, beginning reading materials may be made phonemic by vocabulary control that yields such nonrealistic sentences as "A fat cat sat on the mat," or sounds may be shown in color, or an entirely different type of alphabet may be devised. Well-controlled and objective experimentation in which these various systems are thoroughly compared is a necessity if we are to abandon the exclusive use of t.o. in reading books.

The retrogression in reading skills due to the transition from i.t.a. to t.o. has been further investigated. It seems that Pitman's idea of keeping the upper halves of lines of print much alike in the two systems is not enough. Young readers seem to be noting internal differences in the writing and spelling of words in i.t.a. and t.o. so that there are proactive interferences in transfer of learning from one form to the other.

> 3. The traditional orthography of English is a serious cause of difficulty in the early stages of learning to read and write.

This third conclusion is said to be the most strongly supported by the evidence. In the words of a symposium evaluating the results of research to date: "So long as t.o. is used for beginning reading and writing one must reckon that children are more likely to become confused about the tasks of reading and writing than they would be with a more simple and more regular system for English" (*21*).

For an evaluation of the experimental findings, we shall turn to the paper given by Daniels at the IRA convention in Seattle in 1967. In this paper now available in the IRA publication *A Decade of Innovations: Approaches to Beginning Reading,* Daniels brought out these ideas: The research design was not properly geared to the stated purposes. Rather, the question actually answered by the experiments was whether it is more effective to teach reading by i.t.a. than by t.o. Also the Hawthorne Effect was not adequately equalized between experimental and control groups. Besides, it is dangerous to argue about a group of pupils' performances by simply comparing *mean* scores, since individual differences are cancelled out. For example, five children who do extremely well may balance out the poor performance of fifteen others in the group, and a respectable average may appear. Analysis of frequency distributions shows that there was actually an amazingly high proportion of nonstarters among the i.t.a. groups. Something in the experimental setup seems to have speeded up the progress of high achievers in the i.t.a. groups while not helping and possibly hindering children whom we would expect to experience difficulty in learning to read. (The surmise of the writer is that the high achievers would have made rapid progress under almost any experimental design and that they might be retarded at least temporarily when making the transition to t.o. materials.) Daniels called attention to a small but well-controlled investigation by Swalen in which pupils taught by i.t.a., after a three-year study, showed no significant superiority over children using t.o. (the writer understands that testing was done in t.o. so that children taught in i.t.a. would seem to have been at a disadvantage.) Then the question is raised: "Is the rate of acquiring reading the best criterion?" Probably children with learning difficulties need a relatively slow and very systematic approach (where methods of teaching in addition to types of materials are a consideration).

Daniels cites a laboratory experiment in which children showed problems of transfer unforeseen by the persons designing the Downing experiments. For instance, children confused the symbol for the t.o. *ch* with that for *th*. He believes that the results of the Downing experiments show the problems of transition to be anything but minor since, in transfer, children have to learn a new set of skills. Daniels goes on to say: "I hasten to add that, after three years however, i.t.a. groups were reading rather better than the t.o. groups in t.o. tests though the difference now is not anything like as dramatic as the differences shown at the earlier stages before transfer." He then cites Black who warns about general conclusions to be drawn from the Downing experiments: "The most we can say . . . children taught by means of a series of readers which does not recognize the alphabetic principles at the earlier stages of reading do not progress as well as compared with children taught by the same readers transcribed in such a way that nowhere are they remote from the alphabetic principle."

To quote Daniels directly:

> What we need to know, amongst many other things, is the answer to the key experiment that as yet has not been carried out. What would happen if two groups of children were taught phonetically graded material—graded naturally in i.t.a. and by design in t.o. All the indications are that under these circumstances t.o. would have shown a certain measure of superiority, and this is particularly true of those children learning to read. . . . . I believe that the whole i.t.a. experiment ignored the one control problem which we all know—from our day to day experience—the problem is not so much the medium, rather it is the *method*.

Interestingly enough, the American experimentation involving i.t.a. has given attention to the approach or methods of instruction. The simplified, augmented alphabet was introduced in a private school in eastern Pennsylvania. Lehigh University began experimentation with the use of i.t.a.; and soon a series of Americanized i.t.a., labeled I/T/A, appeared. In 1964, Mazurkiewicz reported on the Lehigh-Bethlehem study (*20*). His investigation involved matched groups, and his detailed report is a chronology of events marking the comparative progress of the experimental and control groups over the period of about a year. In general, the i.t.a. groups moved through equivalent reading materials faster, were more skillful in word recognition, and constantly read books of a higher level of difficulty than did children in the control groups. Note in exact quotation from his 1964 report that all teachers involved in the experiment used a rich and varied reading program.

Following is the quotation from Mazurkiewicz's report (*20*). *The bracketed inserts are added by the writer for comparative purposes.*

> Both populations are using a language-arts approach to reading instruction in which writing is used as an aid to reading development, experience story use is emphasized, wide supplemental reading is encouraged, and variety in the basic material is promoted. . . . The levels of i.t.a. taught children in the eighth month of school indicate that 24 percent of these first grade children are instructionally placed in third reader materials, 51 percent are reading second reader materials [*only 5 percent of t.o. pupils*], 15 percent are reading first reader materials [*74 percent of t.o. groups*], and 11 percent are reading at or below a primer level [*20* percent of the t.o. children].

It is interesting that 11 percent of the slowest-learning children in this investigation compares with 10 percent in the British studies.

Transition from i.t.a. to t.o. reading was begun by a large proportion of the children in the third and fourth month of the investigation. Observers saw no evidence of confusion as pupils moved from one medium to the other. While results of the experiment are impressive, we must keep in mind that it had run less than a year and longitudinal results are not apparent. Moreover, individual teachers may have varied considerably in the ways of using the language-experience approach and developing experience stories; there may have been wide variation in the amount of supplemental reading done voluntarily by individual children.

It is undoubtedly easier to control variables in studies like the British ones where basal reading materials of the same series were used by both groups, with transliterated versions for the i.t.a. population. There is value however in the type of studies done in America where methods of instruction are considered and where different approaches (as phonic and i.t.a.) are compared. If, however, t.o. and i.t.a. are to be compared reliably when using two different methods of approaches, we need a group of children in i.t.a. for each of the two methods, similarly a group in t.o. for each method, plus a group not involved in any way in the experiment. (A group might involve several classes.) The four groups involved in the study would receive equivalent treatment so far as teacher guidance and instructional materials are concerned. Thus the Hawthorne effect would be equalized and measured to some extent by comparisons with the fifth group not connected openly with the study. The variable that does seem hard to control is the quality of teaching, and one of the major findings in the 27 First Grade Reading Studies sponsored by the Office of Education was that the quality of teaching was more influential in pupil success or failure than was any one of the approaches under investigation. Downing, in his later study, had the same teacher teaching both i.t.a. and t.o. as a means of controlling differences in this respect.

The aforementioned First Grade Reading Studies were subsidized by the Office of Education for the purpose of determining which of the various approaches is most effective for beginning readers. The studies were reported at the IRA 1966 Convention in Dallas; follow-up investigations of the same population on second grade were reported at the Seattle Convention in 1967. Five of the reports involved one or other versions of the initial teaching alphabet at the first grade level; four were reported for second grade. Again, details too numerous to give in this paper may be secured by consulting the references which follow.

Ensuing remarks will be confined to the evaluation given by the directors of the entire group of studies, Bond and Dykstra (*2*). Their report begins with a description of i.t.a. and a review of the research done in Britain. These are the findings they cite: Pupils recognize more words in print, comprehend more continuous prose in print, read faster and more accurately, and progress through reading instruction more rapidly. Head teachers reported that they noted a rise in beginners' level of self-confidence, an increased enthusiasm for and interest in independent reading, more independence in work, improved creative writing, and that thoughts flowed more naturally.

Bond and Dykstra summarize the general results of comparing i.t.a. and t.o. as approaches to beginning reading (with the study continued a second year) accordingly. They are approximately equally effective in terms of pupil achievement as shown through a paragraph meaning test. As measured by the Word Reading subtest of the Stanford Achievement Test and the Fry and Gates word lists, i.t.a. is superior in developing word recognition abilities. There are no significant differences in reading accuracy and rate as measured by the Gilmore Oral Reading Test. The evidence on spelling abilities was inconclusive since the t.o. proved superior in three projects and i.t.a., in one of the projects.

On page 124 of their report, Bond and Dykstra conclude that i.t.a. is relatively effective and encourages pupils to write symbols as they learn to recognize them and to associate them with sounds. The medium appears to help in learning sound-symbol relationships. Pupils using i.t.a. tend to commit to sight vocabulary a relatively large reading vocabulary that is characterized by sound-symbol regularity.

Present status of i.t.a.

After reading voluminously, the writer believes that the results of investigating the place of i.t.a. in reading instruction are as yet inconclusive for these reasons: research must continue several more years; studies to date are not sufficiently longitudinal;

controls were inadequate in most of the investigations since the potency of the Hawthorne effect was not well assessed or controlled; and/or there were variables that operated and "muddied up" the results that should have more reliably reflected differences in the effectiveness of i.t.a. and t.o. she agrees that it is time to both abandon research that has loose controls which yield unreliable findings and turn from computing averages of large-group achievements where the actual results attained by individuals are cancelled out or obscured. Instead, we should turn to laboratory techniques as Daniels and Downing have recommended. Every future investigator of i.t.a. or any system based on regularity in sound-symbol printing should give careful consideration to the critique written by Block (*1*).

Since i.t.a. has not been proved inferior, since children do seem to exel in word recognition abilities when using i.t.a., since we seem to be entering an era when decoding words and learning the alphabet very early are going to be emphasized in teaching beginning reading, it would seem that i.t.a. or some other system of achieving regularity in sound-symbol relationships should receive consideration. Such regularity can be achieved by means other than the use of i.t.a., however. Also, we need to work out materials in such a way that transition to t.o. brings less retrogression in level of reading achievement and that slow-learning pupils are not handicapped.

Let us have well-designed, meticulously carried out laboratory research to find the best medium for teaching beginning reading; to decide on the most effective methods of utilizing this medium (granted that different teachers may vary in which medium or method they find more effective) and to learn whether early concentration on decoding words with lesser attention to meaning—as is the case with certain phonics-based systems—is ultimately the preferable way to prepare children to be voracious, perceptive, comprehensive, critical, appreciative readers in their later years. We need researchers who are not inwardly committed to proving that one thing or another is actually better than something they like less, but rather committed to studies that will prove which one *is* best.

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Pro-Challenger: JOHN DOWNING

University of London

FIRST, some criticisms of i.t.a. research will be discussed. The writer's original experiment with i.t.a.—funded by several foundations, including the Ford Foundation, with a grant of $300,000—was unprecedented in size, longitude, and careful control of variables. Nevertheless, some criticisms of the research involved have been made, as Dawson mentioned in her article, and some of these may be justified. What research ever can completely escape criticism? But Southgate's criticisms (*32*) were premature and showed incomplete knowledge of the actual procedures of the research, as has been demonstrated in a recent article in *Reading Research Quarterly* (*24*). Daniels (*3*) has misunderstood the purpose of i.t.a. research; for i.t.a. is not a *method* of instruction, but purely and simply an *alphabet* or what linguistics calls more precisely "a writing-system." In the reference section an article (*23*) is listed which deals with this same misconception found in Diack's (*4*) review of the i.t.a. research.

The volume which contains Diack's article is an extremely important document for anyone who wants to understand the controversies about the i.t.a. research methods. The writer's research report was submitted to highly qualified specialists, each of whom wrote an independent judgment of the research.

The judges do not agree with one another, but the consensus was favorable:

1. *Burt:* "No one can read the report without recognizing that we now know far more about the processes of reading and of learning to read than we did before the experiments were undertaken" (*2*).
2. *Artley:* "The Downing report presents the results of a definitive and completely objective study of the value of the Initial Teaching Alphabet in early Reading" (1).
3. *Holmes:* "This reviewer is impressed with the tenacity with which Downing strove for objectivity throughout all phases of his study. . . . *His step-by-step analysis is thorough and cautious and his concluding remarks are conservative*" (*28*).

i.t.a., dramatically superior

The greatest benefit of i.t.a. was found in the first and second years of school. Then, the i.t.a. pupils' reading in i.t.a. showed such tremendous gains over t.o. pupils' reading in t.o. that one can declare with absolute truth that our research found a dramatic superiority for i.t.a. reading. The statistics and other detailed information on the British i.t.a. research are given in the writer's book *Evaluating the Initial Teaching Alphabet* (*12*). For example, in parallel tests, i.t.a. pupils' word recognition and accuracy scores were, by the middle of the second year, *at least double* those of the t.o. pupils; and the i.t.a. pupils were significantly superior in rate and comprehension in reading, too.

Children's free written compositions were also much superior in the i.t.a. classes. They wrote compositions 50 percent longer and used 45 percent more words different from those used by children in t.o. classes (*25*).

At the stage of transition to t.o., although the test results showed a plateau effect in the i.t.a. pupils' t.o. reading scores, teachers stated that the transition was not an important problem. After transition, by the end of the third year, i.t.a. pupils had a t.o. reading age approximately five months in advance of children who had begun with and used only t.o. In t.o. spelling, the i.t.a. pupils were equal to t.o. pupils by mid-third year and significantly superior by mid-fourth year. The greater facility in written composition was maintained beyond the transition stage.

Spontaneous comments from teachers and supervisors indicate the self-confidence which i.t.a.'s simplicity and regularity builds into the beginner's self-image. For example, Wilkinson's report (*35*) of the i.t.a. experiment in Bolton, Lancashire, states, "All of them (teachers) agree that children bring to their task greater confidence and acquire more quickly the assurance that comes with the belief that they will succeed."

These remarks represent truly dramatic advantages for i.t.a. in beginning reading. Little wonder that Eccles, minister of education in two British governments, declared in *The Times* of London that the results of the writer's ". . . long experiment justify

Sir James Pitman's faith in his alphabet, and will greatly encourage the many teachers who have already begun to use it" (*27*).

What about the remedial field? Not all experiments have shown success for i.t.a., and, therefore, there is probably an interaction effect between i.t.a. and some other variables. But there have been some notable successes for i.t.a. For example, Gardner (*26*) obtained significantly superior results from two experimental groups of seven-year-olds with a previous history of severe reading problems. Curry had remarkable success using i.t.a. with boys aged between 10 and 12 in a school for juvenile delinquents, and Peters reported complete success with a 13-year-old boy at her Cambridge clinic—a case which had resisted all other treatments, persistently applied (*5*).

Recently the writer made a survey of 25 schools for educationally subnormal pupils (mostly mentally retarded) and found unanimous agreement that i.t.a. was superior for this type of child (*7, 14, 15*). A typical comment was the following one from a headmaster of a special school using i.t.a. with pupils aged 8-11 with IQ's between 44 and 78. He wrote, "From the earliest days there was a noticeable improvement in attitudes towards the reading situation, which was soon reflected in other subject areas. For the first time many of these children enjoyed feelings of success rather than failure. They clearly felt secure in the knowledge that the processes they were learning were simple, logical and could be relied on. They became more self-reliant and less demanding."

So successful has i.t.a. been in British Army experiments in adult literacy classes that it has been generally adopted for that purpose (*30*). Th special i.t.a. adult literacy materials developed by Artley and his colleagues are an important step forward in this application of i.t.a.

It should be noted that evidence from the five USOE First Grade Reading Studies (*33*) which used i.t.a. has not been discussed. This omission is because of their dubious validity which the writer had indicated elsewhere (*16, 17*). The same applies to most other first grade i.t.a. research. The notable exception is the research designed by Holmes in schools at Stockton, California, research which has begun to produce evidence which strikingly confirms the British i.t.a. research (*31*).

How i.t.a. works

The arrival of i.t.a. on the reading scene has coincided with notable advances in the application of psychological and linguistic research in reading instruction. Vernon's (*34*) monumental survey led her to conclude that a major cause of reading disability is "general cognitive confusion." The contribution of i.t.a. is to prevent such cognitive confusion by clarifying the structure of English in three special ways:

1. Because i.t.a. has fewer alternative printed symbols for the same word or phoneme, the frequency of regular grapheme-phoneme relations is greatly increased in a variety of contexts.
2. Because i.t.a. does away with multiple-letter graphemes for single phonemes, the phonemic structure of a word is made obvious. The number of characters tells the child the number of phonemes in the word.
3. The abolition of gross irregularity by i.t.a. removes false clues which conceal the structure in t.o.

These factors are highly important in facilitating the discovery approach in learning to read and the creative expression approach in the teaching of writing. What is more, unlike so-called "linguistic" approaches or synthetic phonics methods, these advantages can be gained by using the natural real-life language of children.

Thus i.t.a.'s development is very well articulated with the improvements in teaching methodology which have been derived from new theory and research on children's thinking processes (*18*). But here the writer must cool the flames of enthusiasm for i.t.a. in general. The i.t.a. is not a single package deal. It remains merely an alphabet. You cannot assume that the letters "i.t.a." are a kind of magic talisman which guarantees the best in any materials labeled "i.t.a." by an author, publisher, or text book salesman. The truth is that when someone offers you an "i.t.a." program, you ought to be more cautious than usual because i.t.a.

is still only new and experimental. The enormous differences between alternative i.t.a. basal programs can be seen, for example, in the fact that one has been called the "i.t.a. Creativity-Discovery approach" (*19*), while another extremely different i.t.a. series has been described as one in which "the mode of teaching and learning is largely through telling and being told respectively and much less through guided discovery" (*29*). Four references will help you to find out more about the very great differences between alternative i.t.a. programs (*10*, *20*, *21*, *22*). If i.t.a. is worth adopting in schools, it is worthwhile also to make sure that i.t.a.'s introduction is associated with other important advances which have been made in research in linguistics, psychology, and education. Then you will get the full benefit of the tremendous potential which i.t.a. offers for the improvement of reading and writing in English.

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Con-Challenger: WILLIAM B. GILLOOLY
Rutgers University

IN INQUIRING into the effectiveness of i.t.a., we must first of all consider the limitations imposed by the methodological problems which are found in the relevant studies. The reports by Marsh (*15*), Asher (*1*), and Gillooly (*9*) discuss statistical problems as well as difficulties resulting from the design of the studies. In addition, we need to discuss problems not mentioned by these writers.

Separating writing system effects from the effects of other factors

The writer is especially concerned by the fact that many of the studies to date have not controlled such extraneous sources of variance, as novelty effects, which were shown to be important in i.t.a. research by McCracken (*16*). Or, if they have controlled these effects (as the better U. S. studies seem to have done), they have not controlled the effects due to the reading materials themselves (apart from the writing system per se). Relevant to this latter point, it is important to note that as long ago as 1966 the writer pointed out that Tanyzer and Alpert (*19*) found differences between t.o. reading series may be as great as those found between i.t.a. and t.o. reading series (*10*). Since then, Hayes and Nemeth (*14*) have confirmed this finding.

The limitations this shortcoming imposes on our knowledge of the effects of using a transitional writing system are not widely recognized. For example, Dawson has stated that as a result of their reanalysis of the first year i.t.a. data, Bond and Dykstra (*2*) concluded that i.t.a. is in some limited ways superior to t.o. However, although these researchers do not make it clear, this conclusion seems to be based on a comparison of the i.t.a. reading materials (primarily the *Early-To-Read* series) with the t.o. basal materials (primarily the Scott, Foresman series) and is not sustained when the i.t.a. materials are compared with some other t.o. materials such as the Lippincott series. In other words, there has been no clear-cut superiority demonstrated yet for the i.t.a. materials over all-available t.o. materials. Since this is the case, we cannot be sure whether differences which do exist between the *Early-To-Read* and some t.o. series are due to the different writing systems involved, the different materials employed by each, or both. As a result, we are prevented from attributing any i.t.a.-t.o. series differences to the effects of the different writing systems per se as Bond and Dykstra seem to do. In addition, any conclusions based on head teachers reports confound reading material effects with those due to novelty. The writer tried to make both of these dangers clear in his 1966 review (*10*). It is apparent, however, that they were not made clear, so it should be restated that these common shortcomings must be kept in mind during all future discussions of i.t.a. until better experiments are designed.

Another source of variance not controlled adequately in the i.t.a. studies is in the writing instructions given the experimental subjects. As far as i.t.a.'s effects on writing are concerned, the writer is still in agreement with Fry (*8*) that it is more likely that the instructions given i.t.a. children ("Don't worry about your spelling; go ahead and write") rather than the writing system per se which leads them to write longer, more creative stories. Consequently, it would be desirable if we might see more research of the kind Henderson (University of Delaware) is doing into the possibility that the same effect may be had with t.o. children if they, too, are encouraged to write without being penalized for incorrect spellings. In other words, let us try using a shaping procedure for teaching children to write conventional English whereby they are encouraged, first of all, to write and, later in gradual fashion, to bring their spellings into conformity with accepted patterns.

Before leaving this brief discussion of the methodological shortcomings found in the research on i.t.a. and the consequent restrictions imposed on our conclusions, the additional problem that we face in interpreting the second and third year data from the USOE-supported studies will be discussed. In the studies known to the writer, promotion policy for the participating youngsters was not under the experimenter's control and, as a result, different proportions of i.t.a. and t.o. children were retained in the grade. The effect of such a policy should be to reduce or eliminate differences between the treatment groups. Consequently, we do not know whether the widely encountered null findings in these longitudinal studies reflect a true picture of the differences between the reading materials employed. It is hoped that in future longitudinal studies some procedure may be found to get around this problem in a way that is mutually acceptable to researchers and professional educators alike.

In summarizing the effects of using i.t.a., the writer regrets to say that he believes very little more is known now than was known two years ago. Any appearance of progress seems, after close scrutiny, to be the result of a failure to take into account the relevant extraneous variables.

The possibility of enhancing transfer effects during transition

It has been widely recognized that the i.t.a. children lead their t.o. counterparts up until the time they transfer to t.o., and this fact has given rise to speculation about the ways in which transfer can be enhanced. That the effects of transfer observed in connection with the use of transitional writing systems are in accordance with present transfer theory has been shown by Gillooly (*11*). Hence our concern here is for the ways in which that theory can be most effectively applied. There seem to be two ways.

The first of these involves the use of different instructional strategies. Regrettably, the only study (*20*) available to the writer on this subject is uninterpretable due to methodological errors. For example, in order to correct a problem of small sample size, these researchers used an inappropriate unit of analysis in their statistical calculations. Further, their experimental design seems to confound novelty and instrumentation effects with the effects due to treatment. We must, therefore, turn to a consideration of the second way of enhancing transfer.

It has been suggested by Downing (*7*) and others that altering the design of the individual i.t.a. graphemes may enhance transfer. One way of shedding light on this issue is to turn to an investigation of the use of transitional writing systems other than i.t.a. If the design of the letters is important, perhaps these systems have produced different transfer effects.

In what is the most careful analysis of the use of other transitional writing systems in America available to date, Bothe (*3*) has shown that wherever such an approach to reading instruction has been tried on a widespread basis, it has failed. His work covers not only the use of Phonotypy (an ancestor to i.t.a.) but Leigh's Pronouncing Orthography as well. Bothe further showed that if one is unwilling to explain the discontinuance in terms related to the efficacy of such an approach to reading instruction, then one is obliged to accept a list of alternative explanations much longer than the two proposed by Harrison (*13*) or the eight proposed by Dewey (*6*). The parsimonious explanation for repeated failure, of course, is that the use of a transitional writing system is not so effective a means of teaching children to read t.o. as other approaches. By the way, in this early educational research, the effects due to the materials themselves were controlled by transliterating currently used readers into the new writing systems.

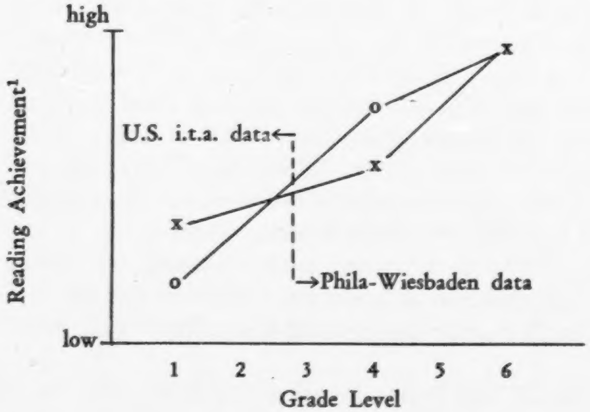
In addition to Bothe's work, Gillooly (*12*) has shown that the results of the Boston experiment with Pronouncing Orthography, parallel quite closely the 20th century research with i.t.a. even to the point of showing that the Pronouncing Orthography children led their t.o. counterparts up to the time of transfer to t.o. Such parallelism in the results, despite the fact that Pronouncing Orthography differs considerably from i.t.a. (it has seventy symbols and uses lightfaced type in an attempt to retain conventional spellings) and coupled with the uniform failure of other transitional writing systems to maintain the widespread approval which led to their initial adoption, does not seem to encourage the hope that changing i.t.a. will improve transfer effects.

Some suggestions for future directions of research

Dawson has, quite appropriately, called for laboratory research into the reading processes which are relevant to the topics we have been discussing. The writer will now suggest some directions that laboratory research may take.

Since the i.t.a. children lead the t.o. trained until the time of transfer, this fact suggests that they might retain their lead if they were not transferred and, by implication, that we English speaking people may be at a continual disadvantage to those who live in a country where the writing system is more regular. However, although we must be careful because of the inevitable limitations in cross-national work of this kind, Preston's Philadelphia-Wiesbaden studies (*17*) seem to show that there are no substantial, consistent differences which favor either German or American sixth grade children when each group is reading in his own writing system—despite the fact that German is written in far more regular fashion than English. The conclusion of little or no difference between the two groups does not seem to be so true at the fouth grade level, however. Such cross-national differences which do exist then (and, Preston's data indicate that the differences in reading achievement favor the U. S.) seem to diminish with the age and reading experience of the children (*17*). These effects along with the pretransfer effects of using i.t.a. are shown in Figure 1.

Figure 1: The interaction of writing system characteristics with reading experience.



[1] The tests used to measure reading achievement vary from study to study; hence, achievement levels reported here are illustrative of writing system differences in terms of achievement taken in the most general sense.

o = irregular writing system
x = regular writing system

Apparently, then, the effect of writing-system characteristics on reading achievement is not invariant across the different levels of reading experience. How can we explain such a phenomenon? The following is one possibility.

At the very early stages of learning to read, a child who uses a regular writing system is at some advantage for obvious reasons (*10*). Hence, i.t.a. trained children lead t.o. children (shown at the first grade level in Figure 1) when each reads in his own writing system, although this advantage is not found on all subtests of the Stanford Achievement Test (*11*).

The child, however, who is reading the irregular writing system (t.o.) soon learns that grapheme-phoneme correspondences are poor cues on which to depend and, therefore, shifts as soon as possible from a reliance on these cues to other stimuli. It seems likely that these other stimuli are the higher-order units of language, such as, morphemes, words, or even phrases. Perhaps it is because of this shift in the functional stimulus for reading that proofreading is so difficult a task.

The child who has shifted from a dependence on grapheme-phoneme correspondences to the higher-order units enjoys a distinct advantage over one who still relies on the lower-order units. The advantage, however, can be expected to be only temporary for, later on, even the child reading the regular writing system will likely shift to the higher-order units; and, at that time, it should be expected that little, if any, difference will exist between groups reading writing systems which differ widely in terms of their grapheme-phoneme correspondences. Hence, the overall effect of the irregularity of a writing system exerted quite early may be to encourage children to begin the transition toward a dependence on the higher-order cues sooner than they might otherwise have done.

That we in the United States do not pay a heavy penalty in terms of the incidence of reading failure because of our writing system is also indicated by the Philadelphia-Wiesbaden data.

The hypothesis presented here can account for the evidence reviewed by Brown (*4*) which indicates that the functional stimulus in adult reading is not the individual letter, and it can also explain why the clearest German-American difference Preston uncovered was in terms of reading speed. Apparently our children read faster than Germans, and so ours should if they are reading higher-order units when the Germans are not.

Of course, the use of a more regular writing system should facilitate spelling and, according to Brown (*4*) the Germans do enjoy an advantage there.

That the situation is a bit more complicated than presented here is indicated by Preston's evidence that writing-system characteristics, in addition to interacting with reading experience, may also interact with the sex of the child. That is, instead of finding that females read better than males as is generally true in this country, it was found that in the Wiesbaden group males were the better readers. In addition, the fact of a writing system by sex interaction receives some support by Sebesta's experimental study (*18*). Further, there is the observation reported by travelers to foreign shores that instructional methodology seems to be highly correlated with writing-system characteristics. So, our hypothesis is too simple. But at least we have here, it would seem, the necessary ingredients for a beginning of research in answer to some very important questions. Let us not be too hasty in making irrevocable decisions about our writing system or the writing system used to introduce our children to the reading process until some of these questions have been answered by reading research.

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LINGUISTIC SCIENCE is a very old and a very complex discipline, and one that has undergone a great deal of study and research throughout the years. Recently, however, an unusually strong surge of interest has developed in this topic. Among other manifestations of this interest, one finds that linguists are making attempts to apply linguistic theories to the teaching of reading. These attempts are the subject of much discussion and varied points of view. Three papers which contain discussions of this topic follow. The reader will find the viewpoints expressed in these papers to be informative and stimulating.

Is the Linguistic Approach an Improvement in Reading Instruction?

RONALD WARDHAUGH
University of Michigan

THE HISTORY of reading instruction is not a very glorious one if one is to believe the recent documentations of that history by Diack (*6*), Mathews (*17*), and Chall (*3*). These writers, or critics if you prefer, show it to be a history filled with research studies which contradict one another, with gimmicks that have come and gone in almost regular cycles, and with controversies over methods. It is not difficult for us to see it as a history in which claims about kinesthetics, tachistoscopes, phonic word attack skills, reading pacers, whole word methods, and bibliotherapy are advanced in one big, buzzing, babbling confusion. And now we see claims about linguistics added to the clamor. Linguistics is *in* today. Several years ago eye-movement training was *in*. Now it is *out*, or nearly so. What will we be saying about linguistics ten years hence? Will it be *out*, too, and will eye-movement training be back in?

The purpose of this paper is to show just what kind of linguistic knowledge has found its way into reading instruction, both in materials and methods. The writer would like to state at the very beginning that the linguistic knowledge which is there is neither what he would call current linguistic knowledge nor is it always sound knowledge, linguistically or pedagogically. In the course of this paper an attempt will be made to evaluate both the claims that have been made about the use of linguistics in reading and the experimental evidence that has been produced to date. It will be shown that these claims are doubtful in some cases and also that the experimental evidence that does exist for the use of linguistics in reading is as unrevealing here as it is in almost any other area of reading research. The writer will even go so far as to deny that there is a *linguistic* method, yet, he will conclude by showing how linguistic knowledge properly applied cannot help but lead to improvement in reading instruction. This improvement, however, can take place only if there is a fairly immediate cessation of the kind of dabbling by the linguist in reading instruction or by the reading expert in linguistics that we have witnessed in recent years. Each must become more serious about the other's problems and difficulties than he is at present. An attempt will be made to indicate what is meant by *serious* during the course of the paper.

Linguistics and reading to date

1. Some claims by linguists

Let us begin by stating some of the claims made by linguists and others who have given considerable thought to the teaching of reading and to the incorporation of linguistic knowledge into that teaching, briefly the claims of Bloomfield as in Bloomfield and Barnhart's *Let's Read* (2), Fries in *Linguistics and Reading* (*10*), and Lefevre in *Linguistics and the Teaching of Reading* (*14*). All three worked within what has become known as the Bloomfieldian or descriptive-structural tradition in linguistics. They are structuralists who believe in describing the spoken rather than the written language, in using such concepts as the phoneme and the morpheme in their analyses and descriptions, and in separating the description of a language into phonological, grammatical, and semantic components.

In their writings on the teaching of reading, they stress what appear to them as linguists to be the various important aspects of the teaching of reading. Bloomfield stresses the fundamental regularity of much English spelling in contradistinction to those who stress the chaotic nature of such spelling. He also stresses the need to teach the regular features of spelling systematically, the importance of whole-word perception right from the beginning of reading instruction, and the elimination of picture cues. In addition, Bloomfield emphasizes the relative unimportance of the content of what is read and claims that the child is faced with what is essentially a decoding task. The child already "knows" the content, for, after all, he can speak the language. Fries develops some of these principles. He insists that every teacher of reading should distinguish quite clearly among *phonics*, *phonetics*, and *phonemics;* he stresses the importance of presenting words in contrastive sets; and he advises using only upper-case letters to lighten the recognition burden. Fries conceives of reading as the high speed recognition of already known content. For his part, Lefevre's major contributions are those of pointing out the importance of intonation contours and sentence patterns in reading, of units larger than the word, and of the need to find an adequate theory of reading. All three writers meticulously avoid normative judgments, statements about "correcting" children's mistakes, and suggestions that teaching the child to talk is part of the task of teaching him to read; instead they are essentially concerned with the presentation and gradation of the linguistic content of reading materials and with the devising of suitable teaching methods.

Most of what they say about reading cannot be ignored. However, some points they make have perhaps less justification than others, for example Fries' advocacy of the use of minimal pairs and Bloomfield's rejection of pictures. In both cases there is an extrapolation of what is essentially a principle of some use in linguistics into a pedagogical principle. Such an extrapolation must be suspect, since methods employed by linguists in linguistic research are very likely to be quite different from those employed by teachers in teaching.

It could be claimed that most of the research carried out to prove or disprove the linguistic method is work which accepts the views of such writers as Bloomfield and Fries as comprising such a method and questions neither the validity of the linguistic theories which these views reflect nor the argument that a good technique to use in linguistic analysis or linguistic presentation is therefore a good technique for reading instruction. Let us look then at what research evidence there is for the linguistic method.

2. Research on phoneme-grapheme correspondences

It would be true to say that what has become known as the linguistic method of teaching reading is a very narrow method indeed if one examines the texts which are said to make use of or give a bow towards the method and if one reads the research studies produced to date. In essence, the linguistic method is little more than the presentation of regular phoneme-grapheme, or sound-spelling, relationships in beginning reading texts—a kind of phonics with a good, much needed, dose of linguistic common sense added. The materials developed by the followers of Bloomfield and Fries reflect this concern, and there is virtually no indication in the materials that the possible linguistic contribution to reading involves anything more than the systematic introduction of the regularities and irregularities of English spelling. There is, in fact, scarcely more than an occasional passing reference to any other than this one point that linguists have made about English.

What does the research based on the use of such materials reveal? First of all, let us pass over as being valid research the anecdotal evidence of papers such as the one by Wilson and Lindsay (*29*) with its account of the use of the Bloomfield materials for remedial work with 13 seventh graders reading at or below second grade level, or the "house organ" promotional studies. Let us insist at least on fairly objective studies, preferably involving nonremedial readers in replicable designs. Several studies become worthy of mention. Wohleber (*10*) compared the use of a set of Bloomfield's materials and the use of a set of basal materials with over 200 matched pairs for three years in classes moving from first to third grade and reported significant differences favoring the Bloomfield materials in all three grades. Sister Fidelia (*9*) compared the Bloomfield approach with a phonics approach in first grade and found no significant differences in performance at the end of a year. Davis (*5*) used modified Bloomfield materials to supplement a basal set of materials and compared this treatment with the use of basal materials alone in four groups of 23 first graders for one year. His results favored the combination, and his replication of the study with twelve groups confirmed his earlier results. Sheldon and Lashinger (*23*), in a study using 21 randomly assigned first grade classes over a one-year period, compared basal readers, modified linguistic materials, and linguistic readers but found scarcely any significant differences at all. An examination of all this evidence leads one to conclude that not very much is in favor of a linguistic method. It is hardly the kind of evidence that is likely to make the publishers of nonlinguistic materials want to get onto the linguistic bandwagon without delay.

There are, however, two better studies than the studies just mentioned, one by Schneyer (*24*) and the other by Dolan (*7*). These studies are much better documented and are on a much larger scale than the others. They are also very interesting because the linguistic method does not show up very well in either of these either. More important still, the studies also show, on the one hand, how narrow that method is and, on the other hand, how almost anything can be said to be a linguistic method if one is bold enough to make that claim.

In Schneyer's research, 24 first grade classes were used with twelve classes in each of two treatment groups. One treatment group used an experimental edition of the Fries *Merrill Linguistic Readers* followed by the McKee *Reading for Meaning Series* while the other treatment group used the Robinson and Artley *The New Basic Readers*. Each treatment group was subdivided into three ability levels with four classes at each ability level. The classes, the teachers, and the treatments were all randomly assigned. The experiment was continued into the second grade with the loss of two classes, one from each treatment group. Here is Schneyer's conclusion at the end of the second grade following the giving of a battery of tests either to all pupils or to random samples of pupils:

> At the end of the second year of this three-year investigation, the major conclusion is that when the two treatment groups are considered as a whole, neither of the two reading approaches produced significantly higher spelling or reading achievement that was consistent at all ability levels. While the basal reader treatment group obtained significantly higher total mean scores on four out of fourteen criterion variables, there were no significant differences between total treatment means for the remaining ten criteria. Three of the significant differences were on the Stanford Test given to all pupils in the study (subtests for Paragraph Meaning, Word Study Skills, and Spelling). The remaining criterion on which there was a significant difference between total means was the Accuracy score on the Gilmore Oral Reading Test that was obtained from the subsamples from each of the treatment groups.

The conclusion seems to be that the linguistic method is no better and no worse than the other method. Schneyer does report considerable interaction between treatment and ability level, so that with particular subgroups one treatment, not always the same one, is better than the other. However, what is abundantly clear from the study as a whole is the lack of any clearly significant superiority of one treatment over the other. In fact, the weight of the nonsignificant evidence actually favors the basal treatment, not the linguistic treatment.

In Dolan's study just over 400 fourth grade students in Detroit were matched with the same number of students in Dubuque for intelligence, sex, age, and socioeconomic status in an attempt to evaluate the beginning reading programs of the two cities. Here is Dolan's characterization of the differences between the programs in the two cities:

> . . . . it can be stated that the reading programs of the Dubuque and the Detroit systems differ radically in their basic concepts of reading in the initial stages. Dubuque schools emphasize the aspect of meaning from the first days of instruction. Word perception skills are built from a basic, meaningful sight vocabulary. Detroit schools assume with linguists that early mastery of the mechanics of word recognition is essential if the child is to develop the art of reading. It is only after he has learned how to get sounds from the printed page that the child can understand the meaning of these sounds.

The Detroit children had obviously been taught by the linguistic method and so they formed the experimental group. Dolan's description of that method makes it sound more like rather-poor phonics than good linguistics. Her conclusion is resoundingly in favor of the Detroit group:

> Although both samples performed above the national norms on all reading tests, the boys and girls of the experimental group recognized words in isolation more readily, used context with greater facility, had fewer orientation problems, possessed greater ability to analyze words visually, and had greater phonetic knowledge than boys and girls taught with the control method. There was no significant difference between the two samples in their ability to synthesize words.
>
> The boys and girls in the experimental group read faster and more accurately, had larger vocabularies, comprehended better, and were more able to retain factual information than the boys and girls in the control group. However, when the more complex comprehension abilities of organization and appreciation were examined, no significant differences were found between the two groups.

In spite of all this evidence, however, Dolan cannot quite bring herself to say that it is the method which is to be given the credit, which is perhaps just as well; for, if this is the linguistic method of teaching reading, it makes me shudder as a linguist. Even Barnhart himself (*1*) does not want to consider this test a fair one and says so in a review of Dolan's report.

3. Modified alphabets

In discussing the linguistic method and its effectiveness, reference will be made to modified alphabets since these are obviously linguistic in nature. Such a modification as Unifon, as described by Malone (*15*), deserves few words indeed. Unifon is based on a poor understanding of English phonology and on the absurd pedagogical principle that you should make a difficult task more difficult by denying a child the use of anything he might already have mastered of English orthography when he comes to school in favor of treating him like one of those automatic scanning devices that banks use for "reading" checks.

In marked contrast to Unifon, the Initial Teaching Alphabet is an interesting modification of English orthographic patterns. It meets some of Bloomfield's and Fries' objections; it is based on a recognition of certain perceptual characteristics exhibited by successful readers; it is "method-free" in that it is usable with any kind of teaching method; and it has its enthusiastic band of propagandizers. Linguistically, it is sound in some places, completely ad hoc in others. For example, you need a manual to be able to write in i.t.a. If it were truly phonemic, there would be no need to have such a manual.

But what about the research evidence for i.t.a.? Do we accept such evidence as Mazurkiewicz's claim about its success in the description of the "phasing-in" of i.t.a. in an experiment filled with uncontrolled variables (*18*) and also in a more recent article (*19*)? Or do we accept Fry's evidence (*11*) from a study employing a diacritical marking system, i.t.a., and a basal reading series in 21 first grade rooms, which led him to conclude that at the end of a year there was little or no real difference among the three groups? Fry's most recent conclusion (*12*) is:

> The weight of research seems to be leaning towards the conclusion that there is very little difference between the reading abilities of children taught in t.o. or i.t.a.

Like so much of the evidence in reading, the evidence for and against i.t.a. tends to be presented by a partisan of one group or the other. Southgate's conclusion (*25*), following a review of the research, summarizes the writer's impression that there is too much Hawthorne effect present in the studies because of the "promotion" being given to i.t.a. and even Downing himself (*8*) has acknowledged the validity of some of Southgate's criticisms and answered only a few.

4. Syntax studies

In spite of Lefevre's insistence on the importance of syntactic and intonational patterns in reading, only two good studies, both by Ruddell (*21, 22*), seem to exist on this aspect of the use of linguistics in reading instruction. In the first of these studies, Ruddell devised six reading passages of 254 words each to investigate the following two hypotheses:

> 1. The degree of comprehension with which written passages are read is a function of the similarity of the written patterns of language structure to oral patterns of language structure used by children.
> 2. The comprehension scores on reading passages that utilize high frequency patterns of oral language structure will be significantly greater than the comprehension scores on reading passages that utilize low frequency patterns of oral language structure.

His study was conducted in the fourth grade, so he based his selection of patterns on descriptions of the language of fourth graders and controlled vocabulary differences, sentence lengths, and content. Using the cloze procedure and deleting every fifth word, he analyzed the data gathered from 131 subjects and found significant support for both hypotheses. However, since he also found intelligence, father's occupational status, parental educational level, and mental and chronological age related significantly to comprehension of the materials he devised, obviously there are many other important variables in addition to linguistic ones. In fact, among those differences he took into account, only sex differences were not significant!

In the more recent report, Ruddell describes his progress in a longitudinal study in which he is trying to determine how the use of greater or lesser amounts of phoneme-grapheme correspondences and controlled sentence patterns affects reading ability in 24 first grade classrooms. So far he has found evidence, some portions significant and some not, for his hypotheses that these variables are important.

These studies by Ruddell are important studies, but again they touch on only certain linguistic matters and they hardly touch at all on those matters that concern current linguistic researchers. In fact, very few people in reading seem to know anything about what is happening in linguistics today.

5. Summary in regard to studies

All the studies reported here are inconclusive, possibly for three main reasons. The first is that the view of linguistics incorporated into materials for the so-called linguistic method is not a very insightful one. The second is that the methods used by linguists are not methods for teaching reading but methods for doing linguistics. The third is that teachers using so-called linguistic materials almost certainly use them in the same old ways and make no more than a token gesture or two towards linguistics. And when they do make such a gesture, it is towards a linguistics which is *not* current linguistics.

The missing dimension—current linguistics

There is something very important missing from the work that has been done so far in applying linguistic knowledge to reading instruction, and that missing element is the linguistic knowledge acquired over the past decade. The kind of linguistics which is partially introduced into some versions of the linguistic method is Bloomfieldian linguistics; however, beginning with the publication of Chomsky's *Syntactic Structures* in 1957 (*4*), linguistics has undergone a revolution. It would not be fair to say that Bloomfieldian linguistics is dead or even moribund; but, to use a current idiom, it is not whre the action is. Let the writer point out a few important ideas in Chomskyan linguistics that are important in reading.

First of all, generative-transformational grammarians, to give the followers of Chomsky a name, make a distinction between the skills and competence a person must have to behave linguistically and his actual observed linguistic behavior. The first interests them much more than the second. Then, they try to account for the first in a highly formalized way by writing precise rules. Generative-transformationalists are also unwilling to separate phonology from grammar as the Bloomfieldians tried to do, and the former most certainly do want to include the study of meaning in their study of language, not exclude it. There are undoubtedly some direct consequences for reading instruction in such concerns as these, but generative-transformationalists have been reluctant to hypothesize what these might be. The writer, however, will be so bold as to venture a few.

First, it is impossible to separate grammar and phonology or grammar and spelling because they are closely interrelated. It is not necessary to postulate a phonemic level of linguistic organization in the Bloomfield or Fries sense so that over-insistence on phoneme-grapheme correspondences is likely to be misplaced. Linguistic behavior itself is rule governed but these rules are extremely abstract and subconscious, so they must be deduced rather than induced. In order to study the process of comprehension it is necessary to know what has to be comprehended—that is, the actual linguistic content of any particular sentence—to know what rule-governed processes enter into comprehension—that is, how that content is processed. Even mistakes should be thought of as applications of the wrong rules, as evidence of faulty processing, rather than [illegible] instances of random behavior.

There is also a growing body of experimental evidence to support such claims as the preceding. Some recent papers and summaries may be mentioned. In an earlier paper (*26*), the writer pointed out some changes in emphasis that current linguistics would demand of investigations in reading. Goodman (*13*) has made a most interesting beginning on studies of what he calls "miscues" in reading, and Weaver (*27*) and Weaver and Kingston (*28*) have marshalled some very interesting evidence to suggest that what is currently happening in linguistics will lead to a complete revolution in our thinking about the applications of linguistics to reading. Weaver suggests that:

> . . . there is an apparent contradiction in the actitude of the teacher toward the word as a unit of language and that of the linguist and certain psychologists who base their experiments on the logical analyses of the linguists.

It might be added that the three linguistic units which elementary school teachers apparently find easiest to talk about and even to define—syllable, word, and sentence—are almost the hardest for a linguist to define. In this connection Weaver and Kingston conclude by saying that "the linguist is talking about things which the teacher of reading needs to know." Recently reported studies, such as those by Marks (*16*) and Mehler and Carey (*20*), offer further confirmation of claims made by the writer earlier:

Marks, on statements about processing; and Mehler and Carey, on statements about the importance of deep structure.

Conclusion

If it is such topics as these which currently interest linguists, then there is *no* linguistic approach in reading at the moment and, very definitely, no linguistic method. The writer doubts if there can be a linguistic method or even a linguistic approach. There might, however, be a linguistic perspective, some kind of basic knowledge which can be applied to reading instruction. Obviously, too, there are methods and techniques which teachers would not employ in teaching reading if they had more linguistic knowledge, and knowing what not to do and what to avoid would seem to be an essential prerequisite to knowing what to do.

In conclusion, it is suggested that what we know as the linguistic method is neither very good linguistics nor very good method, and what success there has been has derived as much from Hawthorne effects as from the linguistic insights found in the new materials. However, reading is crying out for better content; for phonics methods still continue to be based on quite inadequate notions about language, and look-and-say methods and other methods which stress meaning continue to be based on vague notions of syntax and semantics. What teachers of reading need is an awareness of current linguistic ideas and a greater familiarity with the linguistic content of reading. Reading is basically a language process. Linguistics is the study of language. It seems obvious that any adequate reading method be based on the best knowledge we have of language and linguistics. To that extent linguistics will be invaluable to us in reading. But the writer seriously doubts that the use of linguistic knowledge in reading instruction will ever add up to a linguistic method. And, most certainly, it does not at the moment.

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Pro-Challenger: KENNETH S. GOODMAN
Wayne State University

THERE IS no linguistic approach to reading instruction. There can no more be an approach to reading instruction labeled the linguistic approach than there can be one labeled the psychological approach or the educational approach or the child-development approach. The persistence of a question such as we have been asked to discuss stems from a tendency to see linguistics as peripherally related to reading. The fundamental significance of linguistic insights in reading and reading instruction has largely not been understood by workers in the field of reading. Those who have advocated linguistic applications in reading are broadly viewed as faddists adhering to yet another narrow methodological innovation.

Reasons for misconceptions

Several reasons will be suggested for the unfortunate misconceptions that equate linguistics with a method of teaching reading:

1. Reading research and authoritative works on reading and reading instruction have largely taken language for granted. This condition is not unique. In many disciplines relating to language naive assumptions and primitive views have prevailed. Modern scientific knowledge of language has not penetrated very deeply into the minds of nonlinguists. General knowledge of language remains on common sense levels. One might compare linguistics to astronomy in an era in which most people still believed in astrology.

2. The field of reading has no coherent theory, even a nonlinguistic one, to tie it together. It has been characterized by a kind of pragmatic eclecticism. Contributions to the field of reading are judged only on whether they work. Since everything works to some extent, nothing can be totally rejected or accepted. Since theory is lacking, syntheses are not really possible. What results are either accretions and conglomerations or stubborn insistences on simplistic cure-alls.

3. As Wardhaugh has ably demonstrated, early applications

of linguistics to reading have been both narrow and shallow. Linguists were asked the wrong question: How should reading be taught? They responded with the wrong answer though it was a linguistic one. Linguists should have been asked, "What do you know about language that will help one understand how reading should be taught?" Linguists have been all too willing to expound methods of reading instruction without really examining linguistic aspects of reading and with little or no thought to learning theory, child development, or sound instructional practices.

4. The low status of reading specialists and authorities among scholars in academic fields has also played its role. Assuming they have nothing worth saying, linguists, like psychologists, have tended not to read or listen to educationists. Linguists have not become sufficiently aware of the problems previously identified in the area of reading nor the extent to which these problems have been dealt with. Unfortunately this lack of respect for educational scholarship has been matched by a lack of self-respect among many in the reading field. They have been quite willing to accept the idea that any significant contribution to reading must come from outside. Such attitudes have led to unproductive dialogues and senseless wasting of time and energy as those outside the field discovered for themselves what any competent elementary school teacher could have told them.

What has come to represent the linguistic approach is the kind of updated phonics Bloomfield (2) and Fries (4) devised and which Wardhaugh has described. The emergence of these approaches was not unexpected. Neither were the alternate responses of acceptance or rejection on the part of those in education. Now it is the time to set them aside and go on to more significant matters.

A series of premises

Let us then turn our attention from the stated issue of this program to a more pertinent restatement: *Can the application of linguistic knowledge bring about improvement in reading instruction?* The answer which this writer would give—though it is unquestionably affirmative—is not a simple one. To understand it one must examine a series of premises:

1. Reading is essentially the process of the reader's taking graphic input and reconstructing from it a message encoded by a writer.

2. Reading is the counterpart of listening. It uses graphic input while listening uses aural input; but essentially the processes are much the same, and the goal is the same: comprehension.

3. The reader, like the listener, is a user of language. There is no direct connection to the encoder whether he is speaker or writer. To comprehend, the reader must use language in its graphic representation.

4. Reading is a psycholinguistic process. It involves the interaction of language and thought as language is decoded and meaning is reconstructed.

5. To understand the process of reading we must understand how the linguistic code works as a carrier of meaning and we must understand how the reader uses language in comprehending; the study of language and of language use is at the heart of the study of reading.

6. Sound, effective programs of reading instruction must be based on a clear understanding of the psycholinguistic process which they seek to develop, just as they must be based on sound learning theory and understanding of the nature of child development. Further, these all must be synthesized into a coherent instructional program related to a theory of instruction in reading compatible with an articulate theory of the reading process (7).

This set of premises assigns a far more basic role to linguistic applications in reading than our original question implied. Since the reader must be viewed as a language user, applications of linguistics (and psycholinguistics) must be made to all aspects of reading instruction. All methods and materials must be judged in terms of their linguistic validity; that is, how consistent they are in their handling of language phenomena with modern linguistic knowledge and how much they are based on understanding of reading as a psycholinguistic process. This is not to say that linguistic principles are to be substituted for psychological or pedagogical ones. Quite the contrary is true. In reexamining propositions about reading we must seek all pertinent principles and test them with and against one another to come up with a higher synthesis and greater insights. This task is not something that can be left to linguists. It requires the cooperation of scholars and educationists. Those most closely involved with reading and teaching reading are the ones who must ask the right questions, point out the problems, and make the integration of knowledge.

Responsibilities of those engaged in reading activities

Once we could have excused ourselves, in that linguistic knowledge was not available. But now we cannot. Writers and editors of reading materials and tests, authors of text books, researchers, clinicians, supervisors, teachers, and teachers of teachers have a responsibility, first to become informed and then to make the use of this linguistic knowledge in their work. Linguistics is not something to believe in or not to believe in. It makes about as much sense for a reading teacher to reject linguistics as it does for an engineer to reject physics. Engineering is to a great degree applied physics and similarly, reading instruction is applied linguistics.

The reading practitioner must understand the principles by which language is governed just as the engineer must know the laws of physics. Fortunately, as a language user, a reading practitioner has an intuitive grasp of linguistic realities. Linked with the insights into learning which effective teachers possess, this knowledge has frequently led to much sound practice in reading instruction.

Examine, for illustration, the language-experience approach to beginning reading instruction. This approach emerged from an era in education of great concern for the needs of the learner. Though the focus was on using the experiences of children as a basis of instructional materials, there was also some attention given to using their own language. Children composed stories, either individually or in groups, based on recent experiences, which the teacher recorded on charts for subsequent instructional purposes. However, the way that language works was not understood well-enough by the users and developers of this approach. In the process of writing down the story teachers took liberties with the language. Not only were vocabulary substitutions made but the language structures were frequently drastically modified. Often these shifts were in the direction of the preprimer language. Sometimes they were in the direction of the teacher's view of correct language forms. In any case what began as the children's own view of their own experiences in their own language was changed to something foreign and strange sounding to them. If better understanding of language can be incorporated in language-experience activities, they should be much more successful. A reader draws on his knowledge of the grammar of language as much as he does on his experiential background as he reads. He not only perceives but he predicts what he will perceive on the basis of his control over the grammar of the language. If the teacher, however unintentionally, changes the language to an unfamiliar dialect or to a nonlanguage form that no one uses, then the child can not use his control over language as effectively in learning to read. This statement does not mean that the teacher has to create new spellings as the story is recorded. English spellings stay pretty much the same across dialects. But the teacher must accept the child's language as well as his experience or the value is lost.

The writer knows of no aspect of reading which could not profit from application of linguistic insights. One area in which considerable progress has been made is that of readability. Bormuth (*1*) has been able to greatly increase the power of readability formulas by adding linguistic criteria.

In terms of materials for teaching reading most of the attention has gone to linguistically labeled materials largely based on Bloomfield or Fries. Unfortunately there is a time lag in producing materials such that most of what is now on the market is five years out of date, even if it has just appeared. Materials such as those published by Merrill (*5*), Harper & Row (*10*), McGraw-Hill (*11*), SRA Linguistic Series (*6*), Barnhart (*3*), and others belong on a shelf in a museum of the history of reading labeled "First Linguistic Efforts in Reading."

Some quieter developments perhaps hold more promise. Holt's *Sound of Language Readers* (9) reserves the linguistics in the early grades for the enlightenment of the teachers and provides the young readers with a rich diet of interesting literature. In later grades children are provided with lessons on the nature of language as it is demonstrated in what they are reading.

Other publishers are employing linguists as consultants and coauthors on their basal reading series. Without arguing the relative merits of basal reader oriented instructional programs, integration of linguistic knowledge into them would certainly improve their effectiveness, provided of course that there is real synthesis of knowledge and not a mere grafting on of a few linguistic lessons.

Linguistic propositions for incorporation in basal readers

Here are some linguistic propositions which writers of basal readers could incorporate with beneficial effect. In some cases, beginnings have already been made:

1. Reading texts, from preprimers on, could incorporate more natural language. Such language is complete in that it contains all expected elements; it sounds like the language the child know; it avoids artificial language such as *I am* when *I'm* would be more expected.

2. Basal readers can move away from being word centered toward being more language centered; they can avoid teaching words in isolation and always present them in language contexts; they can focus more on building comprehension strategies rather than word attack skills; they can move beyond heavy reliance on controlled vocabulary.

3. In constructing reading material, authors and editors can recognize the importance of both grammar and meaning. There are not one but two "contexts" in language. To use the semantic or meaning context a young reader must be dealing with concepts and ideas that are broadly within range. Similarly, insights into English grammar and its acquisition by young children should be utilized to make it most possible for the child to use the grammatical context effectively. *See Flip Eat* contains only a few eas-

ily learned words, and it does not involve any complex ideas; but it is a hard sentence for beginners to read because it has an unusual and complex grammatical pattern.

4. Texts have to be built around a healthy respect for the language competence which the child learning to read brings to that task. The goal of good reading materials should be to maximize the opportunities for the child to put his language knowledge to work.

5. Similarly texts should be built on an understanding of language variance, particularly dialect differences; alternate pronunciations of words such as *frog, been, can* should be recognized; phonics programs should be designed to cope with the systematic differences of vowels and consonants in different dialects; manuals should guide teachers to avoid confusing dialect differences with reading errors.

6. And, of course, all aspects of basal programs should be consistent with the best available scientific knowledge of language.

Now it might be argued that a knowledgeable teacher could incorporate these principles into his use of current basal readers. The writer agrees. It might even be argued that with sufficient insight and understanding of both the reading process and children, a teacher could get along quite nicely without basal readers. Again the writer agrees. Such a teacher could move right from a language-experience beginning (linguistically updated, of course) into an individualized reading program. In this latter program the teacher could concentrate on helping children build comprehension strategies in a variety of kinds of reading (literature, school texts, informational books, science, math and social studies). Of course such teachers would need preservice and/or inservice education based on a modern synthesis that includes linguistic insights. A wide range of materials and enlightened supervisors and principals would be of help, also (*8*).

Diagnostic and achievement tests

The writer has a few kind words for diagnostic and achievement tests in current use in reading. They tend to be collections of misconceptions and half truths codified and normalized. The scores and profiles they produce are no more meaningful than the assumptions on which they are based, yet significant decisions, such as ability grouping, are often based almost exclusively on these scores. The knowledge already exists that can make reading tests linguistically and psycholinguistically more valid and at the same time make the tests more consistent within themselves. Until better tests appear, the writer suggests that teachers and clinicians throw away the results and study instead the children's wrong answers. Better yet, they can listen carefully to children's reading and learn not only what children are capable of reading but what strengths and weaknesses they possess.

Linguistic contributions to reading research

Linguistic contributions to reading research have been left until last, because the writer feels that a positive answer to the alternate question posed earlier in this paper depends on sound research. Linguistic knowledge can bring an improvement in reading instruction if all phases of reading and reading instruction are adequately investigated in the light of modern information about language and language use. We need to reexamine old questions, but even more we need to frame new questions and seek their answers. Linguistics, properly applied, puts reading in a whole new light. The old elements are there, but they stand revealed in new relationships. We can still research hypotheses, for example, on how best to teach word attack skills, but the answers will lose their significance (real rather than statistical) if we shift our focus from words to language and stop regarding words as ends in themselves. Instead, we will find ourselves researching new hypotheses dealing with the use of grammatical information in acquiring meaning, or the development of self-correction strategies in young readers, or the effectiveness of teaching children to read with materials written in their own dialects. In the six years the writer has devoted to such research, though he has learned a lot about reading, every new bit of knowledge has led to a dozen more questions to answer. These are not simple questions with simple answers because reading is not a simple process. But we now have all the pieces to fit together. Linguistics and psycholinguistics are supplying the missing links.

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Con-Challenger: ANN HUGHES
Open Court Publishing Company

THIS PAPER is a criticism of Bloomfield's kind of linguistic reading instruction, which we will refer to as *alphabetic linguistics.* To highlight its strengths and weaknesses, we shall start by defining three other kinds of beginning reading instruction:

1. intensive phonics.
2. the traditional basal-reader approach, and
3. phonic linguistics, a recent hybrid of linguistics and intensive phonics.

Three other methods

1. The *intensive-phonics approach* begins reading instruction with systematic work on sounds, both vowel sounds and consonant sounds. Both teacher and child are permitted to say the sounds in isolation as well as in combination and to blend them into words out loud. One example of this approach is the Economy series.

2. The second approach to be defined is the *traditional basal-reader approach,* which begins by discussing the meaning of pictures and stories. The teaching of sounds is in second place and is done in a roundabout way. The teacher refers to the sounds but never pronounces them individually. For instance, she talks about the sound of *f*, but she uses the letter name rather than the whispered sound *fff*. The child is expected to *think* the sound and to blend sounds into words in his mind, but he never hears this done or practices it aloud. Vowel sounds are usually not discussed at all until second grade; and if the child attempts to generalize about vowel sounds for himself, he often generalizes from irregular words like *mother* and *come,* instead of from regular words like *stop* and *home.* Some examples of traditional basal readers are the Scott, Foresman series and the Ginn series.

The two approaches, intensive phonics and traditional basal, have long been the subject of great argument. Chall, in her excellent book *Learning to Read: The Great Debate* (*1*), tabulated research results comparing the effectiveness of these two approaches. She points out that research has consistently shown the traditional basal-reader approach to be inferior to intensive phonics. Gurren and Hughes reached the same conclusion in an earlier tabulation of the research (5) and in a recent addendum to that tabulation (6).

3. The third approach to be defined is the *phonic-linguistic approach*, a special type of intensive phonics which involves the complete coordination of the reading material with the phonics training. The words used in the early stories involve only the simplest consonant sounds and a few vowel sounds, either short vowels (*Dan and Don run*) or, in a different reading series, long vowels (*See me eat meat*). New sounds appear in the reading vocabulary of the stories only as they are introduced and practiced in phonics sessions. Thus the child deals only with sounds he has learned. The result is that he can figure out the words in his stories for himself. Some examples of a phonic-linguistic approach are the Lippincott series and the Open Court series.

How does alphabetic linguistics compare with these three?

Now that we have defined these three approaches for background, let us consider the approach being criticized in this paper, Bloomfield's *alphabetic linguistic approach*. It lies somewhere between the others we have described. Like intensive phonics, it has the goal of teaching the child to break the alphabetic code at the start of reading instruction. Like phonic linguistics, it uses a carefully programed reading vocabulary in its stories: *Man can fan Dan*. But it is not like the phonic methods in its methodology. It does not permit the teacher to pronounce sounds in isolation. In this respect, it is like the basal reader, but it carries the restriction against direct teaching of phonics even further by insisting that sounds should not even be *mentioned*.

Bloomfield felt that the linguistic programing of the vocabulary would make the sound-symbol relationships so obvious to the child that no direct teaching of sounds was needed. If the child has trouble recognizing a phonetically regular word, the teacher encourages him to *spell* the word, rather than to sound it out. He is supposed to recognize the word from its sequence of letter names rather than from its sequence of sounds. Some examples of the alphabetic-linguistic approach are the Bloomfield-Barnhart linguistic readers, the Merrill linguistic readers, and the Science Research Associates linguistic readers.

Should sounds be taught?

Many of Bloomfield's followers have justified the taboo against teaching sounds on the basis that it forces the child to use inductive reasoning and discover the sounds for himself. This argument has great appeal today because *inductive* is an *in* word. Indeed, inductive discovery of *words* through decoding is a major goal of most methods. Should we extend the discovery technique to cover sounds as well as words?

At first glance, this proposal seems logical. But is it really a good idea? There are only 43 sounds in English, and it is much quicker and easier to teach them directly than to maneuver the child into discovering them for himself.

In a Bloomfield-type classroom, the child is never told the sounds, so he either learns them inductively or he does not learn them at all. This is a drastic alternative. There are three dangers here: First is the danger of outright failure because many six-year-olds come to school ill-prepared to originate and organize a phonetic system for themselves. Next, even for the more successful child, there is a danger of lasting confusion because his idea of the sounds may remain vague and undependable if he never hears them pronounced separately. Finally, for all children there is the danger of boredom both because the sound-symbol relationships are abstractions and because the process of discovering abstractions for oneself tends to be slow.

The question then is whether alphabetic linguistics has virtues which are sufficient to compensate for its dangers. The best answer comes from research.

Research results

Are research findings favorable to alphabetic linguistics? No! There have been three studies which included a comparison between an alphabetic-linguistic group and a traditional basal group. These studies were carried out by Fidelia (*4*), Sheldon and Lashinger (*8*), and Schneyer (*8*).

The second and third of these studies included a second grade follow up so that there were five comparisons in all. One comparison was mildly favorable to alphabetic linguistics; two were strongly unfavorable, and two showed no significant differences.

The only conclusion that can be drawn from these studies is that the alphabetic-linguistic method is probably not an improvement over the traditional basal-reader approach.

Is the same conclusion valid for the other kind of linguistics, phonic linguistics? Not at all. There have been eight studies which included comparisons between a phonic-linguistic group and a traditional basal group. These studies were carried out by McDowell (*7*), Wohleber (*9*), Dolan (*2*), Tanyzer (*8*), Hayes (*8*), Wyatt (*8, 10*), Ruddell (*8*), and Sheldon and Lashinger.

There were a total of eighteen comparisons in these studies, more than half of which involved groups above first grade level. Of these eighteen comparisons, thirteen were strongly favorable to phonic linguistics while five were either mildly favorable to phonic linguistics or favorable to neither method.

These studies indicate clearly that the phonic-linguistic method is a very definite improvement over the traditional basal-reader approach.

The last five studies in the latter list and the last two studies in the earlier list were Cooperative Research Studies which used the same tests and sent their data to be processed at the University of Minnesota. Dykstra (*3*), who coordinated the Cooperative Research Studies, grouped the data from similar types of first grade comparisons in order to compare various methods with the traditional basal-reader method on a grand scale. Dykstra points out that there were only two methods that consistently showed significant superiority in comprehension and spelling as well as in word recognition. These were the phonic-linguistic method and the method that included intensive phonics as a supplement. In other words, *the most successful methods were those that involved direct teaching of sounds.* None of the other methods

Dykstra analyzed showed a consistent superiority in comprehension: neither i.t.a. nor alphabetic linguistics nor language experience.

Warning by Chall

What did Chall say about alphabetic linguistics and i.t.a.? She mentioned that at the time she was writing there was almost no acceptable research on either method. She grouped alphabetic linguistics and i.t.a. with the other code-emphasis methods; but, on the basis of logic and her own observation, she warned that these methods might prove to be less effective than regular intensive phonics, a warning which was confirmed by the Cooperative Research Studies. She added that "the best results probably come from using some control of spelling patterns and directly teaching their sound values," i.e., from phonic linguistics.

She also noted the tendency of many beginning-reading teachers in England to supplement alphabetic linguistics with direct teaching of sounds, even though the teacher's guide said definitely *No.* She asked these teachers why they did it, and they said it seemed to help. This comment by the teachers in England seems to go straight to the root of the matter. If a child has not figured out the sounds correctly for himself, it *does* help him to be told what they are.

Conclusion

In summary, we can say that the Cooperative Research Studies, like the studies which preceded them, speak strongly for direct and early teaching of sounds—vowel sounds as well as consonant sounds. Research shows that both the phonic-linguistic approach and other methods that include intensive phonics are improvements over the traditional basal-reader approach. But if we ask whether the alphabetic-linguistic approach is also an improvement, the answer is *No.*

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BASAL READING materials and programs have been with us ever since the invention of the hornbook, which contained the content that was considered to be basic for beginning reading instruction. Undoubtedly, this first "basal reader" was written on a slab of wood and covered with a translucent sheet of horn by some overworked scribe who was tired of writing the same content anew for each reading lesson. As the years have passed, basal reading programs have been expanded to include many books and a large supply of supplemental material, and these basal reading programs still constitute the most widely used methods and materials for the teaching of reading. Recently, however, basal reading programs are being challenged by some who advocate different approaches. In the face of this situation, the viewpoints expressed in the papers that follow are very timely.

Basal Reading Programs: How Do They Stand Today?

RALPH C. STAIGER
University of Delaware

ONLY A FEW YEARS AGO it was incomprehensible to many teachers that reading could be taught without the use of basal readers. In the past decade we have seen many innovative methods which have used other approaches to learning to read. A summary of some of these, entitled *A Decade of Innovations: Approaches to Beginning Reading* (10), has just been published by the International Reading Association. This publication was one of the outcomes of the Seattle convention, during which a series of meetings on this topic was held. These innovations will be left for the perusal of the readers, for the concern here is basal readers today.

As reading materials evolved

George Santayana once suggested that the man who does not know history is doomed to repeat the mistakes of the past. It would appear that we should examine the kinds of materials which have been used in other times by children learning to read. Again, there are references which will provide an excellent background in the history of reading instruction, such as Smith's *American Reading Instruction* (5), Matthews' *Teaching to Read: Historically Considered* (4). Letters traced in sand, dust, clay, and wax or wooden tiles were used by pupils in learning their letters even before the first century. The hornbook, with its protective sheath of cow's horn to protect the precious piece of paper with inscribed letters, syllables and religious selections was known to many children in Europe and America.

The primer's name, according to Smith, was derived not from the fact that it was the child's first book but because it contained, in the Middle Ages, the primary essentials of religious knowledge —the Creed, the Lord's Prayer, the Ten Commandments, and a few Psalms. Gradually the alphabet, lists of syllables, and words were added to this religious manual, and it became the standard book of instruction in reading.

During the late Middle Ages the ABC book developed; this might be considered the textbook edition of the primer which, after all, was not a school book but an expensive manual for use in church services. The fifteenth century *Enschude Abecedarium* contained the alphabet, the Pater Noster, the Ave Maria, the Credo, and two other prayers.

It is important to remember that these progenitors of modern readers—the primer, the hornbook, and the ABC book—developed together and were derived from one another.

American readers

3

The *New England Primer,* which went through twenty-two editions from 1727 to 1776, was the first book designed for schools in the American colonies. It was a very popular book but was eventually supplanted as an instructional tool by various spellers, the most noteworthy of which was Webster's *The American Spelling Book,* really one of a series of three readers which evolved out of the sections of his 1783 publication, *Grammatical Institute*. Section I was the spelling and reading beginner's book; Section II contained a treatise on grammar; and Section III, designed for advanced instruction in academies, included "An American Selection of Lessons in Reading and Speaking." The parts were printed separately in 1790, and an intermediate reader was soon found necessary. *The Little Reader's Assistant*, which bridged the gap between the "blue back speller" and the advanced book of readings, became the first set of consecutive readers in the history of American reading instruction. Thus, our basal reading series began, soon to be followed by Caleb Bingham's readers, Lyman Cobb's readers, George Hilliard's readers, Lindley Murray's readers, and others.

During the 1840's and 50's the graded school was evolving, a development which encouraged the writers of graded series of readers. The Pestalozzian emphasis on object teaching and nature encouraged pictures and realistic content, with attention to the principle of moving from the simple to the complex. The flowering of the development of systematic readers was a natural outgrowth of these influences.

There was also a movement in the direction of the word method, as opposed to the alphabetic method of teaching beginning reading in the 1840's. The first readers which made use of this method were those of Josiah Bumstead. Most of the teachers in the country continued to use the alphabet method because the majority of textbooks in use advocated it. Many heated debates developed between advocates of the two methods, forerunners of the debates and arguments which were to rage over other methods in later decades and which are still in evidence.

The McGuffey Readers were the first carefully graded series consisting of one reader for each grade in the elementary school. They also provided for repetition of new words on a more-than-haphazard basis. Their enormous popularity from 1836 to 1875 did not diminish until the 1907 edition appeared. We still hear of people who insist that their children be taught by the McGuffey Readers. Significantly, the edition is rarely specified.

No attempt will be made to trace the development of basal readers from McGuffey to the present, except to point out that a number of influences contributed to changes in these textbooks through the years. Apparent to the observer are not only changes in content, in typography, in quantity and quality of illustration, in binding, and in supplemental materials in a series but also ways in which the readers were expected to help a pupil learn to read—the method.

Elaborate phonetic methods appeared as a reaction to the word methods of mid-nineteenth century. Controversy between synthetic and analytic approaches to phonics flourished; diacritical markings and even augmented alphabets appeared in some series. The word method was expanded into the sentence and the story method. Each series reflected the authors' concern for teaching the users of the books to read. The more popular series appeared to be successful in their missions and, equally important, were attractive and workable in the eyes of the teachers who used them.

It is the quality of salability which helped shape many of the series mentioned previously. Only during the past few decades has the evidence of research had a direct influence upon the content and methods used in basal reading programs. Studies of the interests of children, which corresponded with the beginnings of research in reading, were reflected in the Elson Readers in 1909. We must remember that Gray reported that only 34 studies in reading had been conducted from 1884 until 1910, and 14 of these were reported from 1906-1910.

Other changes which resulted from the scientific study of reading were the recognition of the possibility of measuring reading ability and an emphasis on teaching silent reading as opposed to oral reading, which heretofore had been almost exclusively used in the teaching of reading. Oral reading is today still the most important tool of many teachers throughout the world, especially in those countries in which education is underdeveloped.

The rise of silent reading brought about the teacher's manual which, if its suggestions were followed, helped the teacher make better use of the series. Teaching silent reading, for many teachers of the 1920's and 1930's, was such a new idea that most authors considered manuals a necessary adjunct of their materials, and publishers provided manuals without charge to teachers using their books.

In the wake of the silent reading revolution came supplementary seat work in the form of flash cards, silent reading exercise books, and workbooks. When experience charts for beginning reading were introduced, they, too, were incorporated into basal reading programs. The preprimer was provided as a means of preparing children for the arduous task of reading the primer. Eventually, readiness materials and manuals were incorporated into many series. Each of these innovations was introduced as an educationally useful tool but also as a product to meet a need expressed by teachers, the ultimate purchasers of the product.

If a series was not useful and attractive to the customers, it was not successful. The writer has seen the sales records of such a series of readers. The first year after publication, sales were excellent. The authors were well regarded; the ideas behind the series were sound; and the sales force was active. But during the second year, there was a dramatic drop in sales. Upon frantic investigation, the publisher's representatives found that neither pupils nor teachers *liked* the books. They found them on storage shelves, unused. A large investment of intellectual energy as well as money had gone into this series, but it failed to achieve its purpose because of this fatal flaw.

What does research say?

One of the most telling criticisms of basal reading systems in Chall's *Learning to Read: The Great Debate* (3) is that the systems do not incorporate the findings of research in their methodology. What are the findings of research?

Properly, all reading research is grist for the mill which produces basal readers. This indeed has been the case. Those individuals who have led the building of readers have, for the most part, been very much aware of that research in reading appropriate to their purposes. Unfortunately, as most of us know, much of the published reading research has been pedestrian, poorly controlled, and in need of careful evaluation before being used.

In the confusion of unclear findings, conflicting conclusions, and hazy implications, the publishers, who planned an investment of several million dollars in a series of basal readers, looked at the research and then listened carefully to what their customers wanted. Most series of readers were built by educational realists, and are used by teachers who are faced with the realities of the classroom.

We can only encourage, as Chall suggests, ". . . series of coordinated laboratory as well as extensive longitudinal studies—studies that can give us some definitive answers so that we don't keep researching the same issues over and over again" (*3*).

The research studies which relate specifically to basal readers were relatively few. An examination of the literature revealed only 217 such studies, 161 of which were conducted before 1943. Although categorizing these studies is not always valid—some studies do not lend themselves to discrete classification—Table 1 indicates the relative grouping of these studies.

TABLE 1

CATEGORIES OF STUDIES RELATING TO BASAL READERS

Category	*Number of Studies*
Vocabulary analysis or comparison	59
Content analysis or comparison	49
Method analysis or comparison	41
General treatment	33
Criteria for selection	10
Readability	8
Physical characteristics	5
Amplification of content	5
Interest characteristics	4
Preparation of readers	3

The ease with which words can be counted is probably one reason for the great number of vocabulary studies. A great many of them were masters' theses. The concern for selecting wisely was reflected only in the "Criteria for Selection" category. The purpose of many of the vocabulary and content analysis studies was obviously to obtain data for the selection of materials. This reason could be gleaned from the titles of the studies. All of the "Amplification of Content" studies appeared before a series included supplementary materials.

A surge in comparative studies of methodology appeared in 1967, when the U.S. Office of Education-sponsored first grade studies began to appear. In the report of the Coordinating Center of the Cooperative Research Program in First Grade Reading Instruction, the Basal Reading Program reached the status of being used as a benchmark against which each of the less traditional nonbasal programs was measured. Bond and Dykstra said, "The basal reading program . . . was considered an entity even though the programs of many publishers were used. The various sets of materials in this category possess most, if not all, of the following characteristics:

1. Vocabulary is introduced slowly and repeated often. Vocabulary control is based on frequency of usage rather than on regularity of sound-symbol relationships.
2. Phonic analysis is introduced gradually and usually only after some "sight" words have been taught. However, from the beginning the child is encouraged to use such other word recognition skills as context, structural analysis, and picture clues.
3. Emphasis from the beginning is placed not only on word recognition but on comprehension and interpretation of what is read.
4. Silent reading is emphasized early in the program.
5. The various reading skills are introduced and developed systematically.
6. A well-known basic reading series is used as the major instructional tool."

This description is a useful summary of the characteristics of present day basal reading programs at the primary level. The basal reader method as an entity has important weaknesses when utilized as a criterion or control method for a statistical treatment of differences in test scores, however. The individualistic nature of the studies whose data were turned over to the Center was dictated by Washington and the Coordinating Center had to do the best it could with the data it received. If the design of the 27 constituent studies had been controlled by the center, a more realistic methodology would doubtlessly have been utilized.

The findings of the Coordinating Center were voluminous and appeared in the Summer 1967 *Reading Research Quarterly*

(2). A summary of the 15 conclusions related to the methodology includes several which relate specifically to basal reading programs; but all are important enough to be mentioned at this time, for they are the influences which will shape the primary level basal reader program of the future:

1. Word study skills must be emphasized and taught systematically regardless of what approach to initial reading instruction is used.
2. Combinations of programs, such as a basal program with supplementary phonics materials, often are superior to single approaches. Furthermore, the success of such methods as the language experience approach indicates that the addition of language experiences to any kind of reading program can be expected to make a contribution.
3. Innovative programs, such as linguistic readers, are especially effective in the word recognition area. The superiority of these programs to basal programs is not so evident in the area of comprehension. It is likely that basal programs should develop a more intensive word study skills element, while programs which put major emphasis on word recognition should increase attention paid to other reading skills.
4. It is necessary for teachers to make differential expectations concerning mean achievement of boys and girls. On the average, boys cannot be expected to achieve at the same level as girls, at least with the materials, methods, and teachers involved in this investigation. A probable explanation from the data of this study is that boys are less ready to read when they enter school.
5. Boys and girls do not profit uniquely from any of the programs utilized in this investigation. On the average, girls' achievement is superior to boys' no matter what approach to beginning reading is used.
6. Reading programs are not equally effective in all situations. Evidently, factors other than method, within a particular learning situation, influence pupil success in reading.
7. Reading achievement is related to other characteristics in ad-

dition to those investigated in this study. Pupils in certain school systems became better readers than pupils in other school systems even when pupil characteristics were controlled statistically. Furthermore, these differences in achievement from project to project do not seem to be directly related to the class, school, teacher, and community characteristics appraised in this study.

8. Pupils taught to read by means of a transitional alphabet such as i.t.a. may experience greater difficulty making the transition to traditional orthography in spelling than they do in reading. Longitudinal information is necessary to study this problem.
9. Future research might well center on teacher- and learning-situation characteristics rather than method and materials. The tremendous range among classrooms within any method points out the importance of elements in the learning situation over and above the methods employed. To improve reading instruction, it is necessary to train better teachers of reading rather than to expect a panacea in the form of materials.
10. Children learn to read by a variety of materials and methods. Pupils become successful readers in such vastly different programs as the language experience approach with its relative lack of structure and vocabulary control and the various linguistic programs with their relatively high degree of structure and vocabulary control. Furthermore, pupils experienced difficulty in each of the programs utilized. No one approach is so distinctly better in all situations and respects than the others that it should be considered the one best method and the one to be used exclusively.
11. The expectation of pupil accomplishment in initial reading instruction probably should be raised. Programs which introduced words at a more rapid pace tended to produce pupils with superior word recognition abilities at the end of the first grade. Children today tend to be better equipped for reading instruction when they enter first grade than they

were some years ago, and they are probably prepared to learn more words and develop more mature study skills than are currently expected of them in many programs.

12. Indications are that the initial reading vocabulary should be selected with a greater balance between phonetically regular words and high utility words. It is likely that introducing words solely on the basis of frequency of use presents an unusually complex decoding task for the beginning reader. On the other hand, it appears that presenting only phonetically regular words makes it very difficult to write meaningful material.
13. A writing component is likely to be an effective addition to a primary reading program. In the first place, the language experience approach, which involves considerable written expression, was an effective program of instruction. In addition, programs such as i.t.a. and Phonic/Linguistic, both of which were relatively effective, encourage pupils to write symbols as they learn to recognize them and to associate them with sounds. This procedure appears helpful to the pupil in learning sound-symbol relationships. Furthermore, it is likely that writing common but irregular words such as *the*, helps the child to commit them to his sight vocabulary.
14. It is impossible to assess the relative effectiveness of programs unless they are used in the same project. Project differences are so great, even when pupil readiness for reading is controlled, that a program utilized in a favored project would demonstrate a distinct advantage over one used in a less-favored project regardless of the effectiveness of the program.
15. The relative success of the nonbasal programs compared to the basal programs indicates that reading instruction can be improved. It is likely that improvement would result from adopting certain elements from each of the approaches used in this study. The first step would be to determine the elements within the various approaches most important to the success of that program. For example, the i.t.a. and Phonic/Linguistic programs, both of which were relatively effective, have in common a vocabulary controlled on

> sound-symbol regularity, introduction of a relatively large reading vocabulary, and emphasis on writing symbols as a means of learning them. It would be interesting to know which of these elements, if any, are primarily responsible for the effectiveness of the program. Perhaps an instructional program which incorporated the most important elements of all of the approaches used in the study would be a more effective method of teaching than any currently in use.

Change is in the offing, as it has been since Noah Webster wrote the books which were the progenitors of our present day basal readers. Each change came from a variety of sources—the political and cultural atmosphere of the time, the ideas of an educational innovator, the importation of an idea from another country, or the findings of scientific research. As these ideas came upon the scene, the nature of the readers in use in the schools changed, provided that the pupils and teachers who used the readers found them acceptable.

Similarly, the Hindu religion of India has changed over the course of many centuries. When a new religious idea appeared, it was eventually absorbed into the pantheon and, depending upon its acceptability with the people, was incorporated into the religious life of the country.

Regrettably, many new ideas in reading have taken on a religious aspect. The fervor of their disciples has overshadowed, in many instances, the light the idea has cast. But those which have been found useful have remained—usually in the pages of a basal reader, or in supplementary materials, or in the suggestions made in a teacher's manual.

Change will continue to take place in basal readers. But one new phenomenon has appeared on the horizon. Jerome Wiesner, dean of science at the Massachusetts Institute of Technology, recently was reported to have said that "we have actually entered a new era of evolutionary history, one in which *rapid* change is a dominant consequence. Our only hope is to understand the forces at work and to take advantage of the knowledge we find.

The change of the past was an evolutionary one, in which gradual acceptance could be waited for. Will gradualism in the adoption of new ideas in basal readers be possible in the era in which we now live? Will the knowledge of the high speed technology which surrounds us—computer-assisted instruction and television, for instance—permit the gradual adoption of new ideas into basal readers? Time alone will tell. At present, the educational market provides adequate profits for investments in major projects, such as basal readers. Will this policy also hold in five years?

The future will be disquieting to those who abhor change, but it will be interesting.

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Pro-Challenger: **WILLIAM D. SHELDON**

Syracuse University

ARTICLES in magazines, new materials for reading instruction, and some reported research seem to suggest that the basal reader is obsolescent.

Dissatisfaction with the basal reader contribution to a modern reading program has grown steadily during the past thirteen years. However, in spite of the suggestions of obsolescence and the expressed dissatisfaction, basal readers have grown in number, changed in emphasis, and are still the major material used in most reading programs in the United States and Canada.

As evidence of the increasing popularity of the basal reader we can identify at least eight basal reading programs which share about ninety percent of the reading material market in U. S. schools. In 1946, three basal reading series were dominant; today there are the eight series noted previously and, in addition, ten series of materials based on linguistics, i.t.a., or programed instruction. Phonics materials, once supplementary to basal programs, are now suggested as the prime instruction material and stress phonic instruction not only in grade one but throughout the primary grades and in several series throughout the intermediate grades as well.

It seems evident that basal readers are changing in format, content, and emphasis as they absorb the ideas suggested by advocates of linguistics, phonics, and programing, but the books produced can still be identified as basal readers.

Most of the concern expressed about the basal reader relates to the first year program. As a consequence, 27 reading researchers conducted, under the aegis of the USOE, a study of first grade reading instruction. Comparison of method and materials was made using various basal readers, material emphasizing i.t.a., phonics, linguistics, and such noncommercial approaches as those labeled language experience and individualized or personalized reading.

The results of the studies, published in the *Reading Teacher* of May 1966, October 1966, and March 1967, do not give a clear superiority to any method or material but instead suggest that the teacher is the major element in developing a superior reading program. The studies also suggest that some materials seem to be efficacious with superior pupils while other methods and materials yield best comparative results with pupils of less-than-average ability.

In the study conducted at Syracuse University which compared basal readers, phonics materials, and linguistic readers, it was found that the pupils instructed in the basal readers developed word analysis skills as well as those pupils instructed in the materials specifically designed for this purpose. Comprehension skills were developed evenly across the varied treatments. Teacher security seemed greatest when using the basal materials. As far as the Syracuse study is concerned, teachers are more important than the materials they use.

It is apparent to most reading specialists that the basal reader has both advantages and disadvantages.

Advantages of basal readers

The manuals prepared for most basal series provide the teacher with remarkable aids to instruction. Specialists recommend that when schools plan to select basal readers, the manuals and the programs developed in them should be carefully examined. While the well-illustrated books, lively stories, excellent poems, and plays of the various series are often quite alike, the manuals can be markedly different in their excellence. By studying manuals, a reading-selection committee can determine whether skills of word analysis and comprehension are presented in a logical order, whether the vocabulary load is practical, if concepts undergirding various stories and articles are developed, and whether extended sources and references and additional exercises are provided.

A second value of the basal series is the carefully prepared practice materials. Workbooks and practice pads, for example, serve to give pupils guided practice in the skills program. Teachers can, of course, prepare practice material; but a survey of the kinds of off-hand material thus provided reveals that the practice exercises lack careful development, are not sequential, and are often irrelevant.

When teachers complain about prepared-practice materials, it might be helpful for someone to point out that when the pupil does not need the practice, it is not necessary to provide it.

The basal books are carefully prepared in terms of an increase in difficulty related to all aspects of learning to read. Vocabulary is often controlled; new words are carefully reintroduced; concepts are carefully considered; and the writing is specifically aimed at the ability and interests of the pupils of the level for whom the books are intended.

Disadvantages of basal readers

Basal raders are not universally applicable to all children of the grade level for which they are designed. We estimate from experience and analysis that in a first grade class of 30 pupils, two can skip the prepared-readiness program, master the preprimers in a week or so, and probably complete the intended first grade program in several months rather than needing the complete school year. Eight pupils can skip lightly through readiness and preprimers in a month or so and complete the total program easily before the end of the school year. Fifteen pupils need all the time suggested by the program and complete the first grade materials by the end of the school year. Five pupils will spend the entire year in a struggle with the readiness and preprimer material and can well profit from a second year using the rest of the first grade program.

This description of a not unusual first grade class suggests that teachers must group for instruction and adjust the pace of instruction to individual children.

The basal reader of the 1940's and 1950's seemed to have been designed for the children of an essentially middle class suburban society. It has only been during the past five years that publishers have broadened the content and illustrations of basal readers to include representation from all cultures and social groups found in the United States. Because many schools continue to use the so-called WASP materials, the readers have been severely criticized.

In the past the concept and vocabulary load of the first and second grades was far too light for able children. However, it was too hard for the least able child and only correctly developed for the average child. Today's teachers can find basals which are easy enough for the least able child in the regular classroom and challenging for the most able. Many schools have departed from the practice of using a single basal series for all children and have instead developed a program using two or even three basal series in order to provide programatic instruction for children on all levels.

Basal readers are virtually all uni-dialect, a standard American English dialect commonly called NBC *or* CBS *English.* The demand that all races and social groups be represented in readers was answered. Similarly, the need for readers which express various dialects will be fulfilled.

Basal reader stories have more often appealed to girls than boys because of the content. There is evidence that a better balance is being developed between male-and female-oriented content.

Basal reader stories usually concern noncontroversial topics. The bland, universally acceptable nature of the readers has made their acceptance general and, hence, made these otherwise extensive books commercially feasible. The cheapest four-color, illustrated book with manual on the market is the standard basal reader.

The future of basal readers

The disadvantages of the basal reader will, it is hoped, disappear as the books become more literary in content, present the study skills lesson within the reader, upgrade the phonics program, represent boys more adequately, program skill instruction, and annotate manuals to aid teacher usage.

We see the classroom teacher of tomorrow using co- and tri-basals rather than a single basal and utilizing the advantages of personalized and individualized reading to expand children's pleasure or recreational reading. Grade labels and grade level concepts will be abandoned as the ungraded primary school becomes universal. First grade reading instruction for very immature pupils will probably be abandoned, and reading programs will be developed around programed listening and viewing lessons. We will acknowledge someday the fact that the carefully developed basal reading series has been a major factor in guiding the teacher in developing skill in the teaching of reading.

Con-Challenger: LYMAN C. HUNT, JR.

University of Vermont

THE BASAL READING PROGRAM is the Establishment in the world of reading instruction. In the basal programs we have a massive, all-encompassing enterprise endeavoring to teach all aspects of reading to all readers. As such the basal reading program has been battered by a barrage of criticism during the past two decades. Flesch's unreasoned and unintelligent attack was among the first (*3*). Chall's is the most recent and is far more reasonable (*2*). Because the basal program is the established approach to reading instruction, continuous efforts to undermine the power structure are to be expected.

Despite the critics, the basal reader program enjoys a nearly monopolistic position. Like the medieval castle on the hill it has been attacked from every quarter. And, as with the enduring bastion, its outer structure may have been scarred, but its inner framework has scarcely changed. As with any monolithic force, it endures, relentlessly absorbing rather than succumbing to substantial change.

It is assumed that there is common understanding of the policies, principles, and practices which give identity to any basal textbook program. Its basic features may be described in terms of three dimensions: namely, materials, classroom organization, and teaching patterns.

1. Basal readers typically are assemblages of short-story episodes and anthology-type selections. Generally these selections are organized according to subgroups or units. Seldom are book length selections included. Only in the first grade materials do we find a semblance of continuity from selection to selection. The textbooks are developed by series or sequence in terms of difficulty and are designated as appropriate for one particular grade level.

2. Classroom organization typically consists of several so-called ability subgroups within the class, each of which receives instruction from the teacher on a rotational basis. Children work on assigned tasks at their seats when they are not involved

in direct group instruction. Group instruction is developed by the teacher according to the progress of the particular group through the textbook sequence. Each individual within the group moves ahead at the pace established for the group and is not allowed to progress according to his particular individual power.

3. Instructional practice requires that each textbook selection be developed with the group in the order of its occurrence in the series. Each lesson is taught according to a highly defined series of steps presented within the teacher's manual. The pattern is identical for every selection, and this pattern represents the very heart of basal reading instruction.

The basal program is best characterized as a comprehensive, complex structure comprised of a variety of pieces, intricately interwoven. In scope it brackets reading instruction from prereading through the junior high school. The fact that it is such an enormous undertaking explains in part why all those who learn to read from it move forward so slowly. Under the basal system, learning-to-read is at best an arduous process. Little in-school time remains to utilize and practice the acquired reading skills with a wide selection of other printed materials. The young readers are so busy learning to read that they do not have much time to read on their own.

Madness in method?

Most critics have focused on beginning reading instruction as the most vulnerable part of the totality that comprises the basal textbook program. It is here that attacks have been most vigorous. The controlled vocabulary that links the sequence of skills together has become the symbolic Achilles' heel. The introduction of words as whole or unitary forms prior to the study or analysis of their component parts has been bombarded incessantly. The concept of readiness has been ridiculed. Thus, the quarrel about how to teach the beginning reader to recognize words rages on. Recently Chall's book (*2*) has intensified the conflict. This is a fight about methods for teaching and developing initial word recognition skills and has little to do with other major issues such as developing readers who can "think with print" and/or readers who are committed to lifetime reading.

This particular critic supports the methodology incorporated in the basal textbook programs for initial word recognition instruction as being generally sound. In fact, initial methodology is one of its strongest features. It is far more sensible than many bizarre alternatives currently being proposed. A rebuttal to Chall's exhaustive analysis has been treated elsewhere (*4*). There it has been pointed out that variables of teacher competency and pace of instruction bear far more directly on quality of reading instruction than does the variable of initial methodology. One can find fault with the rate of progress and with the endless deadly detail of the basal program without disagreeing with the method by which word skills are taught.

The real problem

The massiveness of detail within the basal textbook program becomes the source of its greatest weakness. The attempt at universality within the basal textbook program generates within it a constant series of restrictions. These restrictions inhibit reading. Verbally, a great deal happens but not much reading takes place.

Reading is restricted because the basal approach to reading instruction is too careful, too cautious, too complete, and too comprehensive. The reader's rate of progress is far too slow, because the instructional machinery is too intricate. As a result, learning to read becomes too cumbersome an affair. Pupils find themselves trapped on a treadmill of endless activity with very little forward progress. Teachers themselves develop unnatural concerns and fears which prevent them from teaching reading effectively. Many teachers become tranquilized by the restrictive policies of the teacher's manual. This condition has resulted in an ultimate absurdity: teachers are hesitant to let children read trade books during reading class unless each and every move is directed. No greater condemnation can be made.

Snail paced progress is mainly due to the basic structure of the lesson plans contained in the teacher's manual. Presented in skeleton fashion these steps are

1. Creating interest and establishing motivation.
2. Presentation and study of words new to the series.
3. Reading
   a. Directed silent reading.
   b. Rereading and oral reading.
4. Skills development and practice.
5. Follow up (usually workbook or ditto pages).

Established procedure requires that every teacher take each reading group through each step in the lesson for every story. This practice results in a kind of crawling, if not creeping, through each story from first to last until each particular book is finished. When one book is finished in the textbook series, the reader is rewarded with another slightly fatter volume to be labored through according to this same circular lesson plan which, once again, the teacher develops for every story.

Serious Silent Reading

The Reading Step with its introductory or lead-in questions with its directed silent reading and with its endless oral rereading is terribly thorough. Typically, textbook material is read not once but twice and sometimes thrice (excluding previews from eavesdropping on previous groups). As a result of the manual lessons, teacher direction is such that reading as a process is always word by word, line by line, sentence by sentence, paragraph by paragraph, page by page, selection by selection. This manner of reading never ends in the basal program. It is tedious and tiresome. Granted, each reader knows at the time of reading, if not forever more, the content of the material. This kind of thoroughness is not only unnatural but unrealistic.

The concept of reading as promulgated in step 3 of the manual plan, coupled with the fact that each selection is independent and relatively short, causes the reader to proceed by fits and starts. The reader is directed to read a bit to himself, cease to wait for others or hurry to catch up, then take his turn in oral reading. Such practice does little for either oral or silent reading.

This procedure offers no real opportunity to build power as a silent reader. The individual reader never has the chance to read "through the book," to learn to stay with the ideas as they unfold over long stretches of print. Uninterrupted, sustained silent reading, if developed, is done so without, not within, basal reading instruction. This is a most serious deficiency because of all the skills developed in the reading program, sustained silent reading is paramount. Unfortunately, in the basal program it is most neglected.

This writer concurs with Chall's criticism of the manner in which questions are used in directed silent reading (5). Her observations that teacher-talk frequently exceeds amount of time readers read is most devastating. Research by this writer has substantiated this claim. A study conducted with first grade teachers revealed that asking questions and directing the exact amount of material to be read constituted a large portion of the teacher's time. The reader proceeds under the harassment of continual interruptions.

Readers learning to read within this instructional framework easily develop the concept that good silent reading is identical with comprehensive reading and that all reading must be intensive. Every word, phrase, sentence, paragraph, and page is treated with equal importance. Reading comes to responding to every part and soaking up every idea like a sponge. Many teachers, under the spell of the manuals, fear that their young readers will miss some skill if less detailed reading prevails. The young reader sooner or later becomes conditioned to this approach to reading. It becomes his measure of good reading. Thus, many beginners become compulsive about every word, sentence, and paragraph. They have been so indoctrinated.

Certainly, if the teacher's task is to make "the good reader" the intensive, comprehensive reader associated with the basal, balance must be achieved by extensive, exploratory reading in a variety of other books and materials. The child must not only be given time to read widely on his own but he must be encouraged to search all sorts of books for "the big ideas," the ideas that are truly significant. To be flexible in reading the reader must learn to forget and forgo much of the print that crosses his eye and mind. The concept of reading established within the basal readers defeats this sort of flexible reading which is our ultimate goal.

Oral reading?

The most flagrant examples of wasted effort surrounds the oral segment of the lesson plan. Less is attained and more time expended in the reading circle, which is formed so that each reader may have a turn at attempting to say a series of words aloud without error, than in any other aspect of teaching. If each reader spent equivalent time reading to himself rather than waiting patiently or impatiently for his brief turn to read orally, better results would be obtained. Only the able readers succeed at this oral exercise. They do not need daily practice. For the less able this experience ranges from dissatisfying to disastrous. They, too, need to be relieved of this daily ritual. Each would be better off just by attempting to get something out of a book he has chosen to read by himself.

We persist with the strange notion that by having clumsy readers practice oral reading a little each day, they may eventually sound as good as good oral readers. We assume that once this standard has been realized, we will have produced good readers. Most likely we have not. Until a fledgling reader is able to propel himself through printed material without teacher direction, he is not a reader. We should spend more time helping the poor oral reader to become an independent silent reader and less time in group oral reading. Once silent reading has been mastered, one can readily learn oral reading.

Trimmings and trappings

The nonreading steps of the lesson plan formula, unfortunately, are just that. Much time is spent in a variety of actions and activity which when accumulated add up to very little logged reading time. Much time is consumed by teachers in establishing backgrounds, introducing new words and concepts, extending and enriching skills, and finally in giving instructions for workbook exercises. Whatever contribution is made to total reading development through these particular nonreading steps, it is obvious that not much solid reading is practiced during these steps. There is no solid evidence that these preliminary and terminal procedures within the lesson plan contribute more than could be gained from reading practice in sustained silent reading.

The concept of "systematic sequential" progress in skill development is another element which contributes to slowness of pace. By tying in the "new words" (accumulation of recognition vocabulary) and integrating "skills development" with the selections being read, the pace must be slow to insure mastery. Unfortunately, many do not gain skill mastery in this systematic way. There is a good deal of lost motion in these endeavors.

One of the most restrictive concepts underlying sequential skill development pertains to the theory of controlled vocabulary. Underlying this theory is the concept that each word must be incorporated into the recognition vocabulary of the reader at the time of introduction in the textbook. No word can be introduced unless it is so learned. Because of this condition, the rate of introducing words must be slow. Excessive repetition is needed to ensure that this condition is met. This system which prescribes that particular words are to be learned for each particular book during each particular year by every child must be carefully considered by those who criticize the basal textbook program. Prescribing the particular time for learning particular words is too brittle and too rigid. It is the most limiting restriction in the basic source for most other restrictive procedures.

The resultant overattention to a prescribed order for learning words can be disastrous for both the able and the unable. If the child does not assimilate the designated words into his recognition vocabulary at the particular time they are introduced (with the number of allowed repetitions), then this vast superstructure can fall all about him. This condition of accumulating specified words at a specified time in order to be successful can serve as a handicap and a hindrance to many children even though it may be beneficial to others. The able child bursts out of the structure; the slow child struggles unsuccessfully to maintain the pace. Neither truly profits from it.

Summary

Teachers have become engulfed in a sea of fears which prevent them from teaching reading in a flexible, natural manner. With total perfection in the mechanics of reading as a standard, teachers are afraid to let young readers make mistakes. Correct recognition of all words, eloquent expression in oral reading, and mastery of everything stated in the selection become the bonds which teachers cannot break. Ensuring that readers accomplish these goals causes teachers to proceed with extreme caution. This pace leads to a kind of paralyzed inertia. Teachers do not let children read books on their own because "the children might miss something" or "it's too hard to check everybody to see that he knows everything he reads." Teachers have no way of telling whether the children know all the words. There is no quick check for all the skills and no way to be sure everyone knows them all.

This sort of cautiousness betrays a lack of faith within the teaching profession. The teacher has become the prisoner of the manual. The teacher does not trust children as readers. She does not trust herself to teach them through varied and interesting books and other printed materials. The end result—that teachers cannot let children read books—is the tragedy of the basal textbook program.

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THROUGHOUT the centuries, proposed solutions to the grouping problem have been manifold. Dozens of plans have been introduced, only to bask in the educational limelight for a time and then like the Arabs "to fold their tents and silently steal away." The desire to organize pupils in schools in ways which will better meet their individual needs is still keenly felt, and we are still diligently searching for forms of organization which will best facilitate this purpose. Among the more recent plans under experimentation is the nongrade school. The writers of the papers that follow present research in regard to this plan and discuss its advantages and disadvantages for teaching reading.

Do the Advantages of the Ungraded Schools Outweigh the Disadvantages?

ALBERT J. KINGSTON
The University of Georgia

ONE OF THE most widely publicized educational innovations in recent years has been the development of the so-called nongrade school organization (*10, 15, 23*). Although the majority of schools experimenting with nongradedness are elementary schools, a few secondary schools also have adopted the nongraded structure (*4*). Comparatively few secondary schools, however, seem to have embraced the program; and even among elementary schools, most programs of ungradedness seem to be limited to the primary grade levels. The wide variety of schools experimenting with nongradedness and the obvious differences in grade levels involved make an objective appraisal of effects of such organizational structure difficult, if not impossible.

One major problem in judging the impact of nongradedness is that the word "nongraded" has been loosely attached to many different types of school structures. Rarely do writers describe the organizational structure of the particular school in sufficient detail. A casual student rapidly encounters such diverse labels as nongraded school, ungraded school, flexible primary unit, continuous growth program, continuous progress plan, levels system, and primary cycle. It is difficult, if not impossible, to ascertain how identical to or how different one type of program is from another. Even the experts appear to have difficulty in this respect (*1*). An additional problem encountered in appraising the advantages and disadvantages of the nongraded structure is that nongradedness refers only to the vertical organization of a school. Vertical organization pertains to the way pupils are classified as they move progressively through the school's educational program. Typically, American school administrators have employed grades or combinations of grades to meet pupil needs. Vertical organization, however, represents merely one aspect of the organizational structure of a school. In addition, school personnel have developed a number of additional methods for organizing pupils and teachers at each level. These techniques are commonly referred to as means of horizontal organization. Popular methods of horizontal organization include self-contained classrooms, departmentalization team teaching, as well as such special pupil placement procedures as tracking, ability grouping, and flexible grouping. Such familar approaches to reading instruction as cross-class grouping, sectioning by reading achievement, and modificatons of the so-called Joplin Plan are actually examples of horizontal organization.

The variety of horizontal organization methods found among both the traditionally graded and the nongraded schools makes an objective appraisal of the effectiveness of different types of vertical organization extremely difficult. Unfortunately, nongraded schools vary considerably in their horizontal organizational structure (*7*). School A, for example, may be nongraded but employ homogeneous grouping and have team teaching. School B may be nongraded but systematically place pupils heterogeneously and espouse the self-contained classroom. Obviously these and other horizontal conditions affect the performance of pupils and teachers like. The failure of many investigators to recognize the importance of these conditions on the achievement of pupils diminishes the value of their research.

A number of exponents of nongradedness have stressed the need for redefining the concept and implications of the nongraded organization. Goodlad and Rehage (*11*), for example, note that "the variety and complexity of organization in American schools leads to confusion in discourse, practice, and research." Because most research findings have failed to consider the importance of such antecedent variables as horizontal organization, pupil placement procedures, and teacher attitudes, it is not possible to answer the question posed by the title of this paper.

Research on nongradedness

It already has been suggested that much of the research on nongraded organizations has failed to take into account many significant variables which affect the teaching-learning situation. As a result, most of the published research reports fit the class of pseudoexperiments described by Stanley (*20*). Such studies always must be interpreted cautiously because they are subject to numerous contaminating variables as well as to the Hawthorne effect.

As might be expected, more published studies tend to indicate that pupils enrolled in nongraded schools achieve significantly higher than those studying in graded programs. Studies by Buffie (*5*), Halliwell (*12*), Hickey (*13*), and Shapski (*18*), for example, found pupil achievement to be superior in nongraded schools. Like Shapski, Hillson and Moore (*14*) studied reading achievement of pupils and found that nongraded pupils achieved significantly higher scores. Bockrath (*3*) compared average pupil achievement in a group of schools prior to and after they were organized into nongraded structures. Pupil achievement was found to have improved.

In contrast Carbone (*6*), in an often-cited study, found that pupils enrolled in graded programs achieved significantly higher than those in nongraded programs. Enwolden (*9*) also found graded pupils achieved as well as nongraded pupils. Similarly Moore's study (*16*) found that graded pupils achieved higher than those in nongraded structures.

Despite such confounding results, the preponderance of reported studies seems to favor nongradedness. It should be pointed out, however, that whenever a comparatively new innovation in education is judged against a traditional approach, as Tewksbury (*23*) shows, the results appear to favor the new rather than the old or traditional. At present, one can only echo the conclusions of the National Education Association (*17*) which notes that no conclusive data are available which favor either the graded or nongraded organization.

While it is difficult to determine whether pupils enrolled in nongraded schools actually achieve more satisfactorily than they would in nongraded schools, it is nearly impossible to assess some of the other claims made by certain proponents of the system. Part of the problem seems to result from the propensity of educators to describe a given situation, or to discourse on a topic, without a compulsion to collect or interpret data. Much of the published literature on the nongraded organization, for example, is exhortive or opinionated and smacks of the testimonial or describes a successful program in a global way. Unfortunately the lack of standard usage in terms, the failure to identify ways and means, makes most of the reports nearly worthless.

Although it is difficult to superimpose a carefully controlled experiment on an ongoing school program, most of the so-called research on nongradedness is disappointing. In a somewhat satirical article Barnes notes that the concept of nongradedness has become so encumbered with other conditions that it is difficult to identify or to do research. He states (*2*):

> Indeed it would seem that the nongraded bundle is put together from many old customs, a very few new ideas, many practices borrowed from everywhere, and blue reactions when it comes to research. . . . A mischievious model for beginning with nongradedness would seem to be made up of the following segments: 1) begin with an absence of precise definition for what is to be tried, 2) import a zeal for living with a sensate movement, 3) avoid refined perceptions for what will be encountered in the process, 4) set sail with full knowledge of cloudy compass settings for local navigation, and 5) get used to the chant that more research is needed, which, is always the case everywhere.

Excessive claims

It perhaps is inevitable that any new movement will attract zealous supporters to its banners and that some disciples will allow their enthusiasm for the cause to exceed their caution. The result often is extravagant claims which can neither be proved nor disproved. Such seems to be the case of nongraded organization. The claims that nongradedness provides a means for meeting the needs of individual pupils is a case in point. Public education functions on the basis of a pupil-teacher ratio in all fifty states. Education, thus, is basically a group, as well as an individual, process regardless of how the school is organized. Obviously the teacher is of paramount importance in modern education. Any organizational structure at best can only aid the teacher to develop those human relationships which facilitate learning. The failure of many of those who favor the nongraded school to realize the important role of the teacher and to recognize the limited importance of organization on classroom practice is difficult for the writer to understand. Certainly many of the advantages claimed for the nongraded school, in so far as teaching is concerned, can be and are being accomplished by master teachers under other types of organizational structures. It is unlikely, for example, that the graded organization would have survived in America and Europe so long as it has unless the needs of the majority of pupils were being met.

Another claim that proponents of nongradedness make is that the slowly developing child is less likely to suffer damage to his ego or self-esteem. It is theorized that the trauma of retention under a graded system is both pervasive and persistent but not so traumatic in the nongraded school. Stendler (*21, 22*), for one, has questioned the assumption that less damage is done to a child's psyche is he moves slowly through a nongraded program. Surely most children enrolled in either a graded or nongraded program become aware of their own progress as compared to those of their peers and classmates.

Pupil placement procedures

The majority of existing nongraded programs today involve the primary grades. A survey conducted by Shearron and Wait (*19*) indicates that over ninety-five percent of the responding schools employed reading achievement as one of the criteria for pupil placement. Other frequently mentioned criteria included teacher opinion, social maturity, emotional maturity, arithmetic achievement, mental ability, and chronological age. It is readily apparent that, except for chronological age, considerable margin for error is possible in applying such criteria. Social and emotional maturity are difficult to assess even when appraised by competent clinicians. Mental ability and scholastic achievement usually are determined by standardized group tests. Most psychologists believe that group paper and pencil tests are suitable for predicting group performance but lack sufficient reliability and validity for predicting individual achievements. Most classroom teachers have found many children whose test performances vary considerably from their day-to-day achievement in the classroom. Should the school lack data on entering first grades, as is the case when no public-supported kindergartens are available, the problem of placement becomes even more acute.

Attitudes of parents and teachers

As far as can be determined by a survey of the existing literature, the parents of children enrolled in nongraded programs seem to react favorably. Similarly, teachers seem to like the idea and claim to feel less pressure to cover a specified block of materials during the school year. Presumably, however, certain teachers encounter problems with record keeping and with grouping practices. Probably the greatest difficulties appear to be related to the movement of children into nongraded programs when they transfer from traditionally graded schools or to the placing of children in graded schools when they transfer from nongraded organizations. Despite the listing of problems encountered in the nongraded organization, it would seem that teachers, principals, and parents appear to respond favorably to the organizational structure.

Reading in the nongraded school

Despite the importance of reading achievement in pupil placement and progress in nongraded programs, the writer was unable to find information concerning the possible impact of nongradedness on reading pedagogy. During the period when administrators were experimenting with this type of organization, reading specialists did not seem to be very much concerned with the implications of such experiments. Among reading specialists, there seemed to be more interest in individualized reading, flexible grouping within the classroom, and reading in the content areas.

Descriptions of nongraded programs, however, seem to indicate that typically pupils are placed by reading level and that in a primary block an average of eight to ten reading levels are employed to organize reading instruction. A few programs examined involve the total elementary school and claim to utilize as many as thirty levels. In most cases it is claimed that grouping is flexible and that basal series are employed in reading instruction. It is perhaps an interesting commentary on the poor communication among educators that the writer was unable to find any article dealing with problems created in reading instruction by the nongraded organization or to find an awareness that this type of organizational structure might create a need for modifying traditional reading instruction methods. As far as could be determined, teachers in nongraded schools taught pupils to read just as they had previously. One might question whether the traditional basal reading series are sufficiently broad to meet pupil needs in all "levels," whether placing pupils by reading levels serves to impede in-class grouping, how flexibile reading groups really are in the nongraded school, how pupil needs are identified and dealt with, and what supplementary materials and teaching procedures are employed. Unfortunately we do not know at present.

Summary

It does not seem possible at present to state whether the advantages of the nongraded school outweigh the disadvantages. In terms of objective, experimental research the evidence seems to be far from complete. Certainly there is an urgent need for more complete, long-term evaluation. Again, many of the claims of proponents of the system seem to be excessive. A number of the advantages claimed by those who favor nongradedness can and are being achieved by excellent teachers working in schools organized in a somewhat traditional manner. Because there are many different types of nongraded schools, it is difficult to determine cause and effect relationships to many of the claimed advantages and disadvantages. Most published studies presenting either positive or negative results are fraught with contaminating variables and lack of clarity concerning those factors being studied.

Reading specialists who should play important roles in such programs, for some reason, seem to have played a minor role. Yet in pupil placement and pupil progress, reading achievement generally is of paramount importance. Perhaps the greatest contribution this paper can make is to alert reading specialists to the possible contributions which they can make to researching and asserting in the development of nongraded school programs.

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Pro-Challenger: ROBERT H. ANDERSON

Harvard Graduate School of Education

FIRST, the writer wishes to indicate that he finds Kingston's paper to be a useful one and that he is in essential agreement with the things Kingston has pointed out concerning the gross inadequacy of the available literature and the general failure of the profession both to define and to put into practice the ideas represented by the term "nongraded organization." Special appreciation is expressed for his remarks concerning the lamentable silence on the part of reading experts. It is with some sadness that the writer notes the possibility that this silence may be at least in part due to their close association with the publishing industry whose profits are quite closely related to the continuing existence of graded structure. Inasmuch as the basic problems of nongradedness are curricular and as reading is probably the most important of the curriculum areas on which we concentrate in the elementary school, it is highly important that key figures in the field of reading contribute their talents and energies to the clarification of issues Kingston has raised.

It would in fact be easier to deal with the question if it were worded, "Do the Advantages of *Graded* Schools Outweigh Their Disadvantages?" This phrasing would put the pro-challenger and the con-challenger in a better position because *graded* school arrangements are easy to define, familiar in nearly everyone's experience, and based on certain assumptions which have been the subject of research and discussion for at least a half century. For the pro-challenger, however, the topic if so worded would be almost impossible to defend since few if any of the assumptions underlying graded education are now considered to be valid and the only advantages of graded education that come to mind have the embarrassing property of favoring professional indolence, callousness, sadism, or incompetency.

Since, fortunately, we are spared the impossible task of defending the literally graded school, however, our attention should now be addressed to an examination of the nongraded school. Here our problem is that the nongraded school is, as of 1968, an imperfectly developed concept, especially at the level of practice;

and, therefore, the genuine disadvantages that *may* be discovered over the long run are not yet either evident or researchable. We are confined, at this point, to discussion of some short-run disadvantages that have come to light. The same is true of the advantages, some of which are already apparent but most of which are yet to be fully demonstrated and then researched.

The principal advantage of nongradedness, at least theoretically, is that it is perfectly consistent with the ideal of humane, individualized instruction whereas literal gradedness assumes age-group uniformity of potential, motivation, and learning style; and such uniformity, judged against twentieth century research evidence, simply does not exist.

The chief *disadvantage* of nongradedness, from an operational standpoint, is that it requires of the teacher a far higher quality and quantity of pupil diagnosis, specific lesson planning, and general educational management than American teachers under present conditions can actually handle. It exposes the glaring deficiencies of conventional curriculum guidelines and of the standardized, graded materials in which inadequately trained teachers have long sought refuge. It disturbs the already overloaded administration of the school by requiring more flexibility, more variety in resources (both human and material), and more professional energy devoted to such functions as evaluating and reporting pupil progress than does the graded school. Where resources and professional zeal are marginal, therefore, the *graded* arrangement is obviously to be preferred even though it promises no benefits to the children.

As the writer has already pointed out in an article (*1*) and as several informed scholars (notably Glen Heathers, John Goodlad, and William McLoughlin) appear to agree, the great majority of recent "research" on graded-versus-nongraded schools is quite worthless. Its chief weakness is that the researchers have failed to provide proof that the so-called nongraded (experimental) group was indeed functioning in ways consistent with generally accepted definitions of nongradedness and, further, that they also failed to show that the so-called graded (control) classes were not in some significant ways deviating from literal gradedness in the direction of a more humane, flexible, and appropriate form of vertical organization. As a result, the publication of data from such studies does little to increase our understanding.

Perhaps a particular advantage of the nongraded arrangement is that it has apparently accelerated the long-overdue awakening of American teachers to the essential inflexibility and impracticability of the self-contained classroom as a form of horizontal organization. By demanding even more of an already overburdened staff, each of whose members functioned in the protective privacy but crippling isolation of the one-teacher classroom, it compelled teachers to seek help from one another and to devise a more open social-pedagogical system within which pupils could find more outlets and more alternatives. Actually, it appears that American schools would, by now, be more genuinely nongraded, in all respects if the trend toward cooperative teaching had emerged ahead of or simultaneously with the trend toward nongrading. Ironically, some of the most daring innovators of the early twentieth century (notably Preston Search and John Dewey) recognized or anticipated this fact and advocated the abandonment of both graded structure and self-contained staff organization, but their words fell on deaf ears and only a half century later did we come to discover (or rediscover) the wisdom of their counsel.

Nor, in fact, is the discovery confirmed even now. McLoughlin (3), in perhaps the best available study of research on the nongraded school, laments that "the self-contained classroom has remained marvelously undisturbed in most ungraded schools." He also notes that homogeneous grouping, which unfortunately appears to be the dominant feature of many allegedly nongraded schools, "does little or nothing to reduce individual differences and improve student performance." On the other hand, McLoughlin reports a strong and growing interest on the part of American teachers with respect to the adoption of nongradedness:

> While it may be impossible to depict with any semblance of accuracy the extensiveness of nongrading in America today, one thing is clear—schools want to nongrade! Educators are all too familiar with the

> gnawing shortcomings of the traditional graded school and are willing to work to establish a program that has even the slightest promise to providing more meaningful educational experiences for boys and girls. But restructuring a process as complex as education is an enormous task and there are few firmly established guidelines to follow in this undertaking.

Heathers (*2*) supports McLoughlin's views and adds that nongradedness must be developed in concert with other innovations (notably, team teaching) and with the assistance of effective (and therefore costly) teacher retraining programs. He than goes on to report that despite their many problems, the new reorganization structures being developed in American schools have on the whole tended to inspire the faith and confidence of the participants (pupils, parents, and teachers) and thus to encourage their continuation. In fact, although a number of efforts at nongrading are known to have foundered for one reason or another (usually, the evidence suggests ineptitude or unpreparedness of the staff), what is remarkable at this stage is that so many of the projects *do* continue in force and the teachers *do* persist in the conviction that the extra effort is worth making.

The only matter to which Kingston referred and which disturbs the writer is the reference to Stendler. In the writer's opinion Stendler's conclusion is unwarranted, and he believes that there is evidence in the research literature, particularly that dealing with the effects of promotion and nonpromotion, to suggest an alternative conclusion. In fact, it is in this area that we have not only some reliable research support but also particularly strong testimonial evidence. On the other hand, when the less-talented child spends an extra year in an artificial or notably imperfect nongraded school, Stendler's view may be accurate.

While it may be disconcerting to a profession that needs more and better guidance from research, the only honest position that a pro-challenger can take on the topic as worded, at this moment in history, is that the nongraded school *appears* to be a workable (though difficult) idea and thus far its advantages for children are far more apparent than are the disadvantages (again, for children!), if there are any that can be cited. Most of the disadvantages that *can* be cited at this point reflect only the price that we continue to pay for our past sins against children and the fact that educational reform and the attainment of truly humane and individualized school programs are neither cheap nor easy.

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Con-Challenger: JOSEPHINE B. WOLFE
University of Scranton

THE PAST TWO DECADES unequivocably will be documented in the literature as decades marked by professional innovations. Ranking high in the sundry of innovations will be the many and the varied structural organizations which have been suggested as "aids" for solving "the reading ills" of boys and girls in the elementary school. According to Halliwell (*4*), one of the goals that will continue to perpetuate among professional theorists is experimentation with organizational structure to afford more efficient means of providing for individual differences.

Without question, the best plan to be used by a particular school, in a particular classroom, and/or by a particular classroom teacher calls for thoughtful appraisal of its inherent advantages and disadvantages. But, unfortunately, such thinking usually is supplanted by mere eagerness to become involved in a new panacea. In fact, it is disheartening as well as disappointing to observe the degree that emotions can play in the adoption of "a new fad" or "a new trend." Nevertheless, the assignment of the writer is to discuss the disadvantages of one organizational structure, namely the ungraded plan. Although there is a sparsity of research on this topic, the conclusions to be presented have been drawn from the literature* insofar as such research is reported.

The ungraded plan: a challenged plan

Despite the sparsity of sound studies citing significant and stable advantages of the ungraded system as well as the perplexing fact that the ungraded primary unit has "boomed but never bloomed," the movement continues to grow. Also, in the literature, John Goodlad (*3*), one of the pioneers of the ungraded plan, concedes that "nongrading is supported by some plausible sounding claims and theories rather than by research." At the same time, recent literature has begun to add new dimensions by examining such factors as 1) pupil achievement, 2) mental health

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*Acknowledgement is made to Bernard J. Strenesky who gathered the research information at the University of Scranton under the direction of the writer.

of pupils, 3) teacher-parent attitudes, and 4) financial costs involved in the ungraded system. Thus, since it appears from the literature that the overall effectiveness of the ungraded plan is being challenged, let us examine each of the four dimensions.

Pupil achievement

The notion that an ungraded plan can, of itself, increase pupil achievement, provides the most fertile ground for any innovation. Yet, a review of the literature fails to yield any clear-cut evidence that a change from the graded structure to an ungraded structure actually increases pupil achievement. For example, Robert F. Carbone (2) examined the difference between pupil achievement in graded systems and ungraded systems only to find that the pupils in the graded systems scored significantly higher on the Iowa Test of Basic Skills. Also, a group of professionals in Los Angeles under the direction of Hopkins, Aldridge, and Williamson (5), concluded after a four-year experimental study of the ungraded plan that "The pupils in the ungraded program posed more administrative problems and yet achieved no more on the average than those pupils who attended graded classes."

A study, "A Comparison of Pupil Achievement After One, One and a Half, and Three Years in a Nongraded Program," by Jones and Moore (6) confirms reports from the Los Angeles study. Jones and Moore used a standardized reading test to assess the reading achievement of pupils in a graded organizational structure with pupils in an ungraded organizational structure. Although the results appeared to favor the pupils in the ungraded plan after one year, the same pupils were retested approximately one and a half years and again three years later. In both of the latter test situations *no significant difference* was found between the pupils in the graded group and the pupils in the ungraded group. Thus, it appears that when the initial enthusiasm of ungraded instruction waned, the pupils' reading achievement followed the same pattern. Therefore, the Jones-Moore Study definitely implies that *if* ungrading produces better results, the results must be ones of permanency and ones which will be farther reaching in nature than those cited in the study.

Mental health of pupils

Another "tantalizer" which encourages professionals to become a part of the increased trend in ungrading is the assumption that this type of educational structure reduces pupil anxiety and thus fosters better mental health among boys and girls. To determine whether there was validity to such an assumption Carbone (2) administered the Mental Health Analysis published by the California Test Bureau to selected groups of pupils in grades four, five, and six. Though it would appear that pupils in ungraded classrooms (pupils working at their own pace at their individual instructional level with all pressures of grade retention erased) would be psychologically better adjusted than pupils in graded classroom situations, this study revealed no significant difference in adjustment. In fact, the pupils in the graded classroom structure scored much higher in the area of social participation.

Pupil attendance is another factor which is frequently used to measure the degree to which pupils are "satisfied" with school. Hopkins (5), compared the attendance figures of pupils enrolled in ungraded organizational plans with those pupils enrolled in graded organizational plans. Again, the results favored neither group. Therefore, in the confines of the Hopkins Study it appears safe to conclude that pupils in *both organizational plans* manifest similar adjustment and satisfaction with their school situations.

Teacher-parent attitudes

Since the teacher is the most important single factor in a pupil's success at school, it is imperative that the teacher be satisfied with the organizational plan she uses. Although the proponents who strongly favor the ungraded plan frequently imply that teachers who participate in this plan are more content with their teaching situation than are those teachers who participate in the graded plan, some researchers (5) clearly identify the fact that teacher satisfaction does not necessarily increase as a direct result of the initiation of an ungraded plan or any other "innovation plans." However, one cannot deny that *change* of any nature may be stimulating and challenging to teachers, especially in its initial phases. *But*, one should be mindful that the purpose of change is to improve professional situations rather than provide a novel approach without a purpose. In fact, in a study published by the National Education Association (*8*) it is reported that some teachers in ungraded plans are extremely concerned with the widely divergent instructional levels in the many subject areas existing among their pupils. Hopkins (*5*) utilized a scale of twenty-one variables in his study to compare the satisfaction of teachers in both situations, the graded plan and the ungraded plan. Yet, the results of the study revealed no significant increase in the satisfaction of the teachers who were involved in the ungraded plan.

According to Shearron and Wait (*9*) the most surmountable problems existing relative to the ungraded plan is the lack of understanding and acceptance of the concepts of the plan among teachers, principals, and parents. In fact, when Jones and Moore (*6*) asked a group of parents the question "Do you prefer the graded or ungraded plan of elementary school organization?", the results reported that the parents preferred the type of plan in which their child was enrolled. In other words, whatever the *status quo,* the parents were satisfied.

The financial costs

An imperative and equally important factor that must be carefully considered in initiating any organizational plan is its cost. A report by a group of New York School administrators (*7*) reveals that the ungraded plan is capable of mushrooming into an inappropriate program of great expense. Unusual expenditures for any innovative plan such as the ungraded one can be attributed to such academic needs as 1) securement of wide and varied materials, 2) increments in guidance services, 3) establishment and/or revisement of testing programs, and 4) establishment and maintenance of a new system of reporting pupil progress. In fact, according to Carswell and Dagne (*1*) minimal physical changes needed in a school building to initiate any new organizational plan such as the ungraded include 1) modification of space to provide for a wide variety of learning activities, 2) provision for additional space for storage of new materials and new learning media, and 3) arrangement for large spatial areas for conferencing and planning by staff. Thus, because of the very reasons listed, the ungraded plan cannot be conceived of as financially feasible by many school professionals.

Theory or practicability?

The theory underlying the ungraded plan appears to be sound. However, as is so true of most innovations, the query arises, "Can sound theory become a practicability?" From the literature, practicability of the ungraded appears to be questionable. In closing perhaps we should remind ourselves that the single determinant of whether a theory becomes a practicability is the teacher. She, and she only, is the key to any theory or plan whether it be ungraded or graded.

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WHEN READING INSTRUCTION was first provided for children, it was conducted exclusively on an individual basis. Each child was taught as an individual by a scribe, a priest, a tutor, or some member of his family. Then with the dawning concern of society for the education of all, mass instruction descended and has been here, in general, ever since. In the 1950s, however, one began to hear about "Individualized Instruction in Reading." According to this plan each child was to choose his own book for reading and complete it, then choose another one and so on, thus progressing at his own rate. This plan is now being used in several schools in the United States. Those who are interested in learning more about individualized instruction and its effects will find provocative reading in the papers that follow.

What Are the Advantages and Disadvantages of Individualized Instruction?

HARRY W. SARTAIN
University of Pittsburgh

DESCRIBING the current pace of change, a writer in an April issue of *Harper's* refers to the "rabbit-like rate at which the new cultural 'generations' are produced in America" (*17*). She says that "the decade seems to have replaced the century" in framing historical epochs. Let us look back a full century rather than a decade to gain perspective on one phase of educational change.

A little more than a hundred years ago the pony express had gone out of business because the first telegraph line had reached the West Coast. People traveled mostly under the power of Old Dobbin and occasionally by boat or train; the first four-cycle internal combustion engine had just been invented, thereby making the modern automobile possible in the future. Medical men had only recently learned to use anesthetics instead of alcohol, and they were still discovering how germs cause common diseases. The schools had just completed their movement into graded organization, which was supposed to make teaching more efficient by assigning children to classrooms in such a way that all those in one room could be given the same lessons.

What has a hundred years of progress done for us? We now communicate by direct dialing telephones; we fly across the country in a couple of hours, and we have a schedule for placing men on the moon. We are immunized against the most common diseases, and we have gone beyond open-heart surgery to successful heart transplants. In our schools many teachers have learned that individuals in their classes need different types and amounts of instruction. But throughout the fifty states tens of thousands of teachers—secondary, intermediate elementary, and even some primary teachers—still assign the children in their rooms the same lessons at the same time in a fully graded manner. In reporting their extensive survey of reading practices, Austin and Morrison (*4*) noted that ". . . visits to classrooms brought to light actual practices not advocated either by administrative personnel or in curriculum guides and of which administrators and supervisors, at all levels, may be unaware. The most prevalent is having the entire class reading from the same page of the same book at the same time."

Modern excellence necessitates differentiation within classrooms

Many teachers either do not know that the ranges of mental age and achievement in each room are four to seven years or maybe they are unwilling or unable to adapt instruction to individual differences. But all serious educators long have been convinced that we can never attain excellence in education until we challenge each child to learn at the rate he is able.

Differentiated instruction pays off (*33, 62*), but it is not easy to provide. Some schools have tried to solve the problem the easy way by giving a teacher a class wherein it is believed that the children are all somewhat alike in capability. Study after study has shown that these administrative adjustments are of little or no value except when compared with the most unimaginative types of whole-class teaching (*6, 24, 34, 48*). This result is true because when a number of children are grouped to be alike on one skill or set of test scores, they are almost as unlike on other skills or scores as if they had not been grouped at all (*7, 12*). Then we only delude ourselves if we think we can profitably teach them all together.

"Because human variability is extremely complex, the administrative structures of a school cannot provide for individual differences in reading growth; this can be done only by the teacher in the classroom. While clumsy school organization impedes the teacher's efforts, excellent organization removes the blocks to teaching-learning effectiveness by providing the flexibility teachers need in order to marshal all available resources for stimulating learning" (*48*). Given the freedom they must have, good teachers can organize their classes in several ways for differentiating reading teaching. One of these is the individualized reading approach.

Individualized reading

For those who may not be acquainted with it, individualized reading is a teaching procedure in which each child chooses a library book, a literary reader, or possibly a basal book that he would like to read; during most of the daily reading time the youngster reads in this book at his own pace. Instruction is provided through individual pupil-teacher conferences which should be scheduled approximately twice a week and which usually last from three to ten minutes (*4*). During the conference the teacher discusses with the pupil a selection he has been reading, listens to his oral reading, and teaches whatever skills are currently needed for word analysis, comprehension, effective study, etc. He leads the child to understand and appreciate qualities of good literature and tries to interest him in further reading. Some teachers occasionally bring small groups of children together on days when several seem to need to be taught the same skills. Groups may meet at other times to share stories that various members have read. Several sources are available for more complete descriptions of individualized reading (*16, 29, 41, 53, 60*).

Advantages of individualized reading

There have been experimental studies on individualized reading, but the results have not always been dependable (*35, 47*). One gets the impression that some investigators have formed their conclusions before designing their experiments. However, by noting the trends in various studies, by giving unemotionaal consideration to the claims of proponents, and by reviewing some points from the psychology of learning, one can suggest the following advantages for individualized reading as a form of differentiated teaching within the classroom:

1. *The reading material can be the best of children's literature rather than being limited to a set of textbooks* (*27*). No child is forced to persist in reading dull, contrived books. Although practically all of the published reading programs have included recommendations that childrn read extensively beyond the materials in the set or series, many schools have failed to provide the book collections that are needed, and some teachers have not known how to stimulate children to read avidly even when the books were provided.

2. *Individualized reading can begin with whatever good books are available regardless of the orthography or purpose for which they were intended.* In other words, one can use i.t.a. books or whatever other materials the school has on hand, and one can add to the collection or experiment with anything new that appears at any time.

3. *It is possible to capitalize on the child's special interests and unique background of experiences.* The youngster's strong interests can be the source of motivation for individualized reading much more so than when he must read a predetermined set of books or booklets. Likewise he can read in books that have a connection with his own cultural or community background rather than in those where comprehension requires concepts that are strange to him.

4. *The child can progress at the rate which is most comfortable for him.* This flexibility eliminates the waste of time that occurs when the most able learners are required to move as slowly as others in a group. It also eliminates the danger of a child's attaining an inadequate self-image as a result of constantly finding himself struggling at the bottom of a group. It has been shown that the child who sees himself as inadequate is limited accordingly in his achievement (*23*).

5. *The teacher can make adaptions in instructional procedure to fit the child's optimal mode of perception in learning.* There is some evidence to suggest that different children profit differently from varied emphases on visual, auditory, and kinesthetic experiences (*42*); and techniques for estimating the best learning modes have been offered (*9, 37, 43, 52*). It may be easier to diagnose these capabilities and adjust instruction to them on a one-to-one basis than in a group situation.

6. *The skills program can be tailored constantly to fit each child's differing needs in reading the books he selects.* The skillful teacher can learn much from questioning a child and hearing him read privately. Unfortunately, however, Austin and Morrison (*4*) found that instead of having conferences with pupils two or three times a week, the teachers whom they observed sometimes were more inclined to have a conference with each pupil only once in every one to three weeks. It hardly seems possible to offer a complete and systematic skills program along with experiences to develop interest and taste when direct instruction is provided for only three to ten minutes every couple of weeks.

7. *The child is never asked to complete large quantities of unneeded exercises on worksheets and workbook pages merely to keep him occupied while the teacher works with other children.* Some teachers who do not follow the individualized reading approach fail to remember that the best "seatwork" is reading. They often have children waste time doing practice work on skills that they already know.

8. *All of the child's available learning time can be utilized instead of being wasted in having to sit and listen while different children struggle with oral reading of the same selection.* Of course, it must be admitted that good teachers have learned to use other approaches also, without having the children sit in boredom.

9. *The individual conference is personalized rather than mechanical—it provides an opportunity for the development of human traits and values which are unique in the individual and which are fostered by personal interaction.* Today we find ourselves in the early stages of a period of reaction against the movement toward programing learning with the aid of various me-

chanical and electronic devices. These programs necessarily have prearranged answers which are reinforced, with the result that originality of thought is not likely to be encouraged. The child can not identify with, empathize with, nor emulate the attitudes and character traits of a machine the way he can those of a teacher. Consequently, many people fear that the child who is weaned from human interaction too soon may never be able to enjoy the fullness of life. While it may not be harmful to learn some of the simple skills through programing, it seems certain that individualized reading is a safer approach for the development of literary appreciation, creative thinking, and the sensitive qualities of humanity.

10. *The individual conference has special appeal for the children.* The recent first grade study by McDonald, Harris, and Mann (*36*) clearly indicates that the conference alone did not produce increased achievement as compared with group instruction, but it did seem to result in a better attitude toward reading. As yet, nobody has assessed the psychological values that the conference may have in fulfilling the child's normal need to have somebody take a personal interest in him.

11. *Children seem to develop more favorable attitudes toward reading* (*30*, *58*, *59*), *so they usually read more books* (*1*, *18*, *57*). Several experiments have supported one or both parts of this statement. Whether this result is obtained from the novelty effect of the experiments is uncertain because in the three year study reported by Johnson (*32*) the children in the individualized reading classes read more books than those in basal groups during the first two years, but in the third year those in basal groups read more.

12. *It is possible, some say, to utilize the more mature pupils to instruct the less mature ones* (*39*). This seeming advantage must be accepted with caution. Experimentation with pupil team study suggests that the recipient member of the pair learns significantly more than the teaching member (*40*). Regularly depriving an able pupil of time he may need to do challenging reading at his own level could leave the teacher open to the charge of exploitation. The practice of having a poorly motivated pupil

tutor a younger child seems more defensible if it appears to result in improved attitudes and skills for both.

Disadvantages of individualized reading

Individualized reading has some inherent disadvantages, too:

1. *It requires that a large number of books be available.* It has been recommended that each class should have between one and two hundred titles at varying levels of difficulty in order to participate in individualized reading (*49*). Although this quantity is viewed as a serious budgetary problem by some (*4*), it is one that can be overcome without too much difficulty in this day of Federal funding. Anyway, children should have the same number of books available in order to develop reading fluency regardless of the instructional approach that is employed.

2. *Children may have difficulty selecting a book of the appropriate level to stimulate progress.* Individualized reading is predicated upon the principle of self-selection. But some children may select books which are too difficult and then waste time trying to read them before the teacher discovers the problem. Others may select books that are so easy they do not contribute to reading growth (*4*).

3. *There is no opportunity to develop readiness for reading a new selection—motivation, background information, and techniques for attacking new vocabulary.* It has been commonly believed that children can read at a level approximately a grade higher after instructional preparation than without it. If this belief is true, there is a danger that the stimulation gained through the fine literary content of an individualized program can be offset by lack of readiness before reading. Contrariwise, it can be argued that some teachers using other programs go through the readiness step in such a slow, tedious manner that they stultify learning.

4. *There is no systematic procedure for gradual introduction or repetition of the vocabulary and concepts that are being learned.* In recent years criticism of the controlled vocabulary has become so popular that there almost seems to be a Counter-Control Cult. But the writer rarely sees any members of this

cult among the elementary teachers who have to teach beginning reading. As they struggle daily to help the children of average and lower capacity to master the complicated decoding system of written English, teachers cry for more easy-to-read materials that will aid in developing reading vocabulary gradually while maintaining the child's interests in reading. And the number of children in our reading clinics who have certain types of comprehension problems are evidence of the need for considering the concept load in reading, too.

It is naive to assume, as some writers have, that because a child has an extensive knowledge of spoken vocabulary and English sentence patterns when he comes to school, he can suddenly learn to decode visually all that he has learned to decode auditorially through many hours of listening-speaking experience every day for six years. Practically all authors of the regularly published reading programs—eclectic basal series, word-structure programs, and phonics programs—carefully control some aspects of vocabulary introduction because they have reason to believe that few teachers would find their materials useful otherwise.

The errors some teachers make are not in using materials that control vocabulary but in failing to select materials that are interesting despite limited vocabulary and in further failing to stimulate the more able children to move along *as rapidly as they can* to more challenging selections. When properly used, the systematically introduced vocabulary, instead of holding the child back at immature levels, will aid him in quickly progressing to advanced levels of reading. This fact was demonstrated in one situation involving a continuous progress plan where reading was introduced through basal programs having controlled vocabularies and supplemented with extensive individual reading. The most competent children were able to read as many as 5,000 different words by the end of the first year of instruction and nearly 10,000 by the end of the third year (*48*).

5. *A large percentage of teachers do not have enough knowledge of the reading skills so that they can teach them without some professional guidance whenever a child needs them.* Numerous studies have shown that a great many teachers are not

adequately familiar with the word-attack skills (*11, 19, 20, 22, 45, 51, 54*), and other studies have revealed that teachers frequently do not fully utilize the opportunities for teaching skills through individualized reading (*4, 14*). This result would lead us to also question our competencies in the unguided teaching of skills needed for interpretive and evaluative comprehension, literary appreciation, and work-study habits. Since most of us have relied heavily on the teachers' guides when teaching basal programs, we should advise teachers of individualized reading to utilize such fine checklists of skills as those provided in Walter Barbe's book (*8*).

6. *The conscientious teacher feels a great deal of time pressure in trying to complete profitably as many conferences as necessary in a day* (*15, 50*). No doubt this is the reason why, as mentioned earlier, some children are involved in conferences as seldom as once in three weeks. Possibly the natural reduction of pressure in a nonexperimental situation accounts for the fact that indivualized reading in one district resulted in very poor progress (*46*).

7. *There is some doubt about the adequacy and permanence of skills learnings that are developed in brief, infrequent conferences.* In addition to the problems of time and teacher competence, individualized reading programs may suffer from the lack of strategically spaced review and reinforcement needed to maintain skills. Research to date gives us only partial information. Among the controlled studies comparing individualized and basal group instruction several have shown somewhat inferior achievement results for individualized reading (*2, 46, 50*); some have shown no significant differences (*44, 57, 61*); and others have favored individualized reading (*1, 3, 18, 31*). It must be noted that those favoring individualized reading have often been designed to give the individualized classes such special advantages as extra teaching time (*18*), selected or eager volunteer teachers (*3*), and greater accessibility to books (*1*). Even when efforts were made in one case to control all factors, the comparatively higher achievement of individualized reading pupils in subjects

other than reading suggested bias in teacher selection or in population sampling (*32*).

In her experiment Spencer (*55*) overcame the skills-development problems by selecting especially capable, willing teachers and giving them three weeks of inservice preparation. She also provided individualized classes with ten days of introductory word attack skills work, a continued special program of word-attack study, and several hundred dollars worth of additional books. This preparation certainly guaranteed the success of her program when compared with basal group programs not having these experimental advantages.

Because most researchers have measured only general areas of achievement, we still do not know how individualized reading develops such skills as interpretive comprehension and critical reading.

8. *There is a danger that children will not read in enough different types of books to broaden their literary interests.* An inspection of reading records by one research team revealed that some children limited their reading largely to one type of story (*4*).

9. *There is little opportunity for group interaction of the type needed to develop critical thinking and to refine literary tastes.* Frequently a group of students needs to read the same selection, then analyze and argue in order to discover its subtleties. It is possible that without a superior teacher, individualized reading may lead to only a superficial understanding of the obvious.

10. *Those pupils who learn slowly often become restless and do not make good use of time.* In one study it was found that the slow learners profited least from individualized reading, their major shortcoming being in vocabulary growth (*50*). In this, as well as in a second investigation, teachers observed that slow pupils lacked the capability to work independently as long as required between conferences (*26*).

11. *Children from some types of backgrounds may need more definite structure in their school study.* This statement seems to be true for both the children from disadvantaged homes and for

those who have backgrounds of anxiety and compulsiveness. Youngsters from culturally deprived homes have difficulty accepting responsibility without considerable external control (*5*), and they seem to make greater progress in a structured basal reading program than in one based on language experiences and individualized reading (*28*). In a different context a study showed that highly anxious children achieved significantly less in unstructured, permissive situations than in more formal, structured classrooms (*25*).

12. *The teacher's time and energy are quite inefficiently used.* This waste results from attempting to teach skills lessons over and over to twenty-five or thirty-five individuals instead of teaching them to five or six groups of children who are progressing at approximately the same rates. More and more individualized reading teachers are reporting that they group children for teaching skills. Then we must question whether each individual is truly being taught each skill when he really needs it. It seems doubtful that several children who are reading in entirely different books will *on the same day* have need for learning such skills as how to apply a particular syllabication rule, how to interpret a particular type of figurative expression, or how to detect a particular type of propaganda technique. If they are taught such skills in groups, are they involved in real individualized reading?

Combination programs

Because reading is an extremely complex process, no easy, foolproof plan for teaching it has been or is likely to be devised. Individualized reading, like all other approaches, has its ups and downs. The beginning teacher or the one having a low energy level should be cautioned about adopting it. The highly competent, flexible teacher may find individualized reading very rewarding, and he will almost certainly succeed in it. There is mounting evidence, of course, that the teacher, rather than method or organization, is the key factor in a pupil's reading progress (*24, 28, 48*).

An increasing number of teachers are finding it especially worthwhile to begin with a structured program and gradually add individualized reading in various types of combinations (*10, 21, 38, 49, 56*). That's like having the benefit of two incomes without having to moonlight! How can you beat it?

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Pro-Challenger: EVELYN B. SLOBODZIAN
Glassboro State College

LEARNING TAKES PLACE, obviously, within the individual in the varied levels of achievement in each grade, as well as in the different learning patterns found among children within grades. Acceptance of the concept of the learner as unique has been slow; however, grouping practices have varied throughout the years basically for the purpose of achieving greater progress in the teaching of individuals.

Smith (*21*) states:

> Perhaps the chief reason why research on grouping is so inconclusive is because the real bases for grouping are too varied, too deep, and too numerous to lend themselves to one set pattern. Individual differences in ability, rate of progress, and emotional, social, and motivational factors are too personal and unpredictable to adjust themselves to any one 'formula' for organizing all children into the most productive working groups.

Three recent published reports have focused on the importance of individualization (*14*, *5*, *2*). How can individuals best be taught in order to achieve their greatest potential? The writer believes the individualized program has definite advantages.

Children select their own material

Interests of children vary with mental levels and backgrounds (*11*); individual interests are diversified, changing with age and experience. Self-selection of reading materials allows for changing group, individual, and age differences. A child may explore one subject in depth and discover related topics, or he may sample many areas; he gains experience with many types of literary forms. A study (*22*) of first grader's reading choices seems to indicate that basal readers do not satisfy children's interests. In the middle grades, Groff (*7*) found that 80 percent of the children polled preferred individualized reading. Duker's (*3*) study affirms children's preference for the individualized approach. Huser (*9*), exploring the attitudes of 12 groups of intermediate school children, found that their attitudes toward reading were more favorable in the individualized program.

Children read more extensively

The fact that children choose from a large supply of books and are encouraged to sample books before making definite choices provokes extensive reading. Through making selections from literature books rather than textbooks, the child begins to develop his value structure in reading. Lazar (*12*) noted the increase in vocabulary, carry-over into the homes, and self-initiated reading. Newman (*15*) noted that each child in her class had read 25 books early in the school year. In both of these studies references were made to children's enthusiasm for books and to frequent trips to the library.

Children read at their own rate

A problem in grouping has always been that the slow child does not finish with the others. The child himself becomes sensitive; and if the teacher waits for him, she wastes the time of more rapid readers. Enthusiasm wanes; boredom sets in or mischief takes over (*27*). The amount of time rapid readers lose in waiting for slow readers could be used in more extensive and varied reading.

Children assume responsibility

Teachers, following the suggestions of a manual develop readiness, provoke motivation, and set purposes for reading that may be appropriate to the selection. Children who choose their own material do not need such highly structured guidance; they have a need to satisfy. When the teacher confers with the child, she has the opportunity to discover whether he is achieving literal and interpretive meaning; she guides the child while placing responsibility on him for the actual carrying out of suggested activities. Responsibility for reporting to the teacher or to other children is assumed by the child. This task may be through a format devised by the teacher, the class, or the individual child and often includes creative activities. In addition, children keep records on new or unusual words, encountered.

Children read at their own levels

Research indicates that reading levels widen as children progress through school from a probable three year difference at the first grade level to a seven to nine year difference at the eighth grade. This fact does not seem to justify the use of the three-group plan at each of the grade levels. In any group, gross differences in reading ability exist; the needs of the extremes are usually sacrificed to the group needs. An individual's instructional level varies, dependent upon interests and experiences. Variations in word attack and comprehension skills are common, also.

When youngsters need additional practice at a specific level, they are not segregated with a "review" book while other children go on with a more difficult book. On the other hand, small groups can be formed to work on specific problems, but these groups are altered so frequently that children do not usually classify themselves as the "dumb group." Small interest groups form spontaneously, cutting across reading levels, generating enthusiasm, and providing opportunities for interchange between children with different backgrounds operating at different levels.

Children's vocabularies grow

Research has indicated that children's vocabularies are much larger than those presented in basals (*25*); criticisms have also been aimed at the sentence structure of primary books. Teachers have been unable to locate material which would be appropriate for specific groups whose vocabularies and sentence structure differ from those found in basals. Self-selection of materials prevents the stifling of language development and eases the frustrations which occur.

Children share

Opponents of individualized reading claim that pupil-interaction is lost. In the group structure, how much of the interaction is actually pupil to pupil? What happens after the reading group has met and analyzed the story? Children who are reading self-selected materials tend to discuss these among themselves. They share formally, and they share informally with enthusiasm. In addition, children help one another gain in self-confidence because of their ability to help.

Children achieve

Research studies include many variables (*28*) hence, it is difficult to draw conclusions about the progress made through an individualized program. Generally, however, children taught to read individually perform as well or better than children who are taught in groups (*26*).

Johnson (*10*) found that 365 first graders in an individualized program achieved significantly better than 343 children in a basal program. Criteria were word knowledge, word discrimination, and reading comprehension. Sperry (*24*) and Gordon and Clark (*6*) found that the individualized approach produced higher results than did ability grouping. Spencer (*23*) designed an individualized program consisting of systematic phonics instruction and varied story reading. Results indicated this type of individualized program was significantly better on all but one of the measuring instruments. Slow learners may benefit more from ability grouping (*7*); however, for total school populations the individualized approach produces good results (*17*, *1*, *23*).

Reading relates to other activities

Selection of reading stories relates to other topics studied. Social studies and science discussions are enhanced by contributions from the students' varied reading backgrounds. Activities experienced outside school become a part of the child's reading experience which he shares with his classmates and family. The individualized reading approach contributes to the integration of school subjects and to bridging the gap between home and school.

Children are individually diagnosed

As children select books, teachers detect limited interests and attempt to broaden them. In addition to the analysis of comprehension adequacy, teachers can determine in conference a child's thinking level, vocabulary usage, and sentence structure (*13*). Word attack problems are rapidly discerned in the oral reading of sections and as the child shares his reading with others. Skimming skills and the use of locational skills can also be detected.

Teachers develop a better understanding of individual children

Through the conferences, teachers acquire the habit of looking at individuals rather than groups. Unique personalities emerge; teachers note which factors motivate or handicap a child and the nature of the child's learning pattern. The child feels a greater security as the teacher takes a personal interest in him: his self-concept improves; oral language becomes more fluent; his attitude toward reading becomes more positive; and more extensive reading occurs.

Teachers grow

Criticisms of the individualized program claim that teachers lack knowledge in skill development. One author suggests that basal manuals be used with an individualized program (*20*). If the focus is altered from children's needs of the moment to a rigid format of skill development, this change could defeat one of the purposes of the individualized program. First, research has not definitely established the appropriate sequence of skills. Second, a person's best learning takes place when he is in need of learning a particular thing.

Conclusion

Investigators (*4*, *19*) conclude that the finer aspects of the individualized approach should be incorporated into the group structure. The writer believes that the focus should be shifted from groups to individuals. Starting with an individualized program, incorporate the finer aspects of the group approach. As stated by Ramsey (*16*):

Actually, successful individualization involves the basic way that teachers *think* about children and teaching. To perceive them as individuals, be alert to their needs, to view learning as something which children structure for themselves—these are the changes that must be brought about in teaching.

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Con-Challenger: WILLIAM K. DURR

Michigan State University

SARTAIN HAS clearly indicated some of the problems that confront us when we evaluate the worth of a completely individualized approach by examining the research. He has referred to research reports showing that individualized reading leads to greater achievement; he has referred to those in which no differences were found, and he has referred to studies in which students exposed only to individualized reading achieved less than those who had a more thoroughly planned program.

The study by Safford (*5*) which shows that individualized reading leads to poorer achievement deserves a closer look. In his design, Safford did not initially organize a program comparing a control group to an experimental group which was individualized. Studies often show that, regardless of the treatment, the experimental group is likely to excel. This outcome may be because the experimental teachers sometimes view themselves as educational missionaries who are expected to prove that the experimental method—no matter what it is—will be better.

Safford merely waited until a number of teachers had used a pure individualized approach. Then he went in and said, in effect, "You *were* an experimental group, but you didn't know it. Now, let's see how well your children achieved." What did he find? When the individualized approach could be observed untainted by the halo effect of teachers and children who viewed themselves as "experimental," the children who had the pure individualized program were poorer in reading achievement.

We might add other studies to those referred by Sartain. A study by Bonhurst (*2*) found the individualized approach led to poorer achievement. Another by Karn (*3*) reached the same conclusion. A recent study by Miller (*4*) found a significant difference against individualized reading. And still another by Bliesmer and Yarborough (*1*) found individualized reading ranked sixth in the ten methods compared.

The latter study, which was reported in the *Phi Delta Kappan,* also merits a brief examination because it demonstrates a major weakness in much of the research which contends that individualized reading is better. Sartain has mentioned some of the weaknesses in the individualized reading or bust studies. Another is that many of the studies have failed to take into account the simple, proven fact that the variety of materials falling under the umbrella heading *basic readers* do not all achieve the same results with children. Tanyzer and Alpert (6) have proved that some basic readers get significantly better results than others. Bliesmer and Yarborough have proved the same thing, and they have also shown that some basic readers are superior to individualized reading while others are not. But, despite these facts, many proponents of individualized reading ignore the differences in basic readers which do exist. Comparing individualized reading with just any basic program is a little like comparing the ride of a Cadillac with that of an army tank and concluding that cars by General Motors are smoother riding than other vehicles.

Unfortunately, some claims for the superiority of individualized reading assume that we are incapable of noting yawning gaps in logic. For example, we are told that not all children are ready for the same skills at the same time. That makes sense; but when the jump is made from that to the need for a purely individualized approach because *none* of the children in a room are ready for the same skill at the same time, there is a logic gap which is too broad to hurdle.

It is sometimes contended that it is difficult for a teacher to run four or five reading groups in a room. That makes sense for some teachers; but when the solution, in effect, is to have thirty reading groups with one child in each group, the jump from the premise to the conclusion is again too broad for most of us.

Another device which is sometimes used is known as the "strawman technique." If you favor a pure, individualized approach, you say, "It's a waste of time to have each child in a reading group follow along in his book while others are taking turns reading orally. Since this is a waste of time, let's do away with all reading groups."

A steady diet of oral reading can be a dead, dull thing, but we do not have to conclude that the only cure is to do away with reading groups. We can stop doing those things which are inappropriate in a reading group without doing away with the groups themselves.

Sartain has shown some of the problems in a completely individualized approach. For example, he has referred to the research which proves that the overwhelming majority of us do not know a developmental reading skill program so well that we can throw away the aids designed to assist us. And, for example, he has shown that some children are used to, want, and need the guidance and security of a reading group.

Before we look at another point which may clarify this issue, let us examine an assumption on which this point will rest. The assumption is this: what you do with children *does* make a difference. The writer believes that when a teacher teaches a child how to unlock words, the child is likely to be more capable in unlocking words than when the teacher expects him to learn it for himself. When the teacher teaches a child how to read critically, the child is likely to be more capable in reading critically than when the teacher expects him to learn it for himself. The teacher and what she does with a child makes a difference.

If this assumption is true, then the teacher has responsibilities to teach. She must not say, in effect, "I'll spend ten to twenty minutes a week with you in reading—an average total of nine hours for the entire year. During this time, we'll talk about what you have read; I'll evaluate your reading growth; I'll diagnose your difficulties, and then I'll teach you how to be a better reader—if there is time."

One of the difficulties seems to be that we do not always understand the stages in mastering reading skills. These involve, first, teaching the pupil a new skill. Next, we should make provisions for practice to fix that skill and also provide situations in which the skill can be applied. For example, a child needs to be *specifically* taught, how to read for the main idea. We should not assume that all children will somehow discover this skill for themselves or, if a few bright ones do, that they would not have learned it more quickly and more effectively with our help. We must provide immediate practice to reinforce and fix that skill.

Then, we help it become a permanent part of the child by requiring him to apply it in his reading.

If we are doing a good job, the child can learn more, learn more quickly, and learn more thoroughly when we teach, practice, and apply than when we merely expect him to uncover reading skills for himself or when we hope he will master the multitude of skills he should master each year with a very few minutes of our time each week. We must decide what materials to use, but we can organize our classrooms into groups so our pupils can have the greater benefit of our teaching abilities.

Should we provide opportunities for the children in our classroom to read widely in books of their own choice? The answer, of course, is "Yes!" Children should read widely to practice skills and abilities which must become second nature to them. They must read widely to develop the habit of discriminating between materials of varying qualities. They must read widely so they will develop enthusiasm for reading.

But should we assume that the child needs only a tiny fraction of our time during each school week for direct instruction in reading from us? Should we assume that we are incapable of adapting the available skill development aids to the common needs of our children? The child can profit from increased instruction in reading from us, and we do have the sense to select wisely and adapt to our children's needs the multitude of skill development materials which can help them grow in reading ability.

There are many things with which we should concern ourselves in reading: techniques for enhancing self-concept, ways to teach critical reading abilities, probing for causes of severe reading disability. Let us stop arguing about whether we should refuse to use skill development tools which are available to us and get on with teaching reading.

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THE TERM "dyslexia" comes from the medical profession. Originally, doctors used this term to designate a literacy deficiency in adults who had been in an accident in which brain injury had resulted in loss of ability to read. Later, doctors applied the same term in naming the cause of reading disability in school children, assuming that these children had a brain disfunction even though they had not undergone brain injury as the result of an accident. The term has persisted throughout the years in medical and clinical circles. Recently, it has come into fairly popular use with laymen and reading specialists. The original concept has been greatly broadened and amplified, but still the term is not clearly defined nor is its remediation spelled out. It is often used as a "coverall" for several causes of reading disability. Because of this state of affairs it is especially significant that this topic should be discussed in this volume on "Current Issues in Reading."

Dyslexia: Is There Such a Thing?

MORTON BOTEL
University of Pennsylvania

> I am inclined . . . to agree . . . that the diagnosis "specific dyslexia" is suitably obscure, inadequately descriptive, and carries no theoretical implications. J. McFIE, National Hospital, London, England.

IT IS A SEMANTIC AXIOM that words represent things and ideas in the real world. And our effectiveness in communicating with one another depends upon the extent to which we have shared directly or vicariously in these ideas and things. Dyslexia is a case in point. In fact, the title of the session asks, "Is there such a *thing?*" If there is, we should now or soon be able to define it with minimal equivocation in such a way that we could then identify this phenomenon with considerable reliability.

At the present time many problems confront us in defining dyslexia. In the first place, the term is used differently by different specialists. Further, some specialists deny its existence. A confounding problem is the proliferation of synonyms for dyslexia, including: remedial case, developmental dyslexia, congenital dyslexia, perceptual handicap, minimal brain dysfunction, specific language disability, and neurological impairment.

Since many states and local school systems offer special programs for pupils who are alleged to have dyslexia and since parents have to accept such labels for their children (frequently bewildered at their meaning), it seems essential that every effort be made to clearly identify whether dyslexia is an entity and to define it specifically.

One of the many ways to consider this problem is to analyze *two* of the major and apparently different theories of extreme reading retardation: The Theory of Developmental Dyslexia and The Theory of Developmental Immaturity. Developmental dyslexia as a clinical entity was first postulated about 70 years ago (2). Some 30 years ago Orton (*11*) suggested that serious reading retardation might be physiological in origin. Both of these theories still exist and both will be discussed in this paper.

The theory of developmental dyslexia

Among the most distinguished users of the term dyslexia today are Ralph D. Rabinovitch, M.D., neuropsychiatrist and Director of the Hawthorne Center, Northville, Michigan; and Macdonald Critchley, M.D., former Dean, Institute of Neurology, Queen Square, London, England, former Doyne Lecturer on Dyslexia, and President, World Federation of Neurology. In fact, most medical practitioners as well as other professionals whose orientation is primarily clinical have followed the lead of these two men in their uses of the term.

At the National Conference on Dyslexia in Philadelphia, 1966, Rabinovitch (*14*) postulated "that the syndrome called dyslexia is a separate entity, discretely definable from many causes of reading disability." This entity ". . . reflects a definitive neurological dysfunction in the absence of history or signs of brain injury." "The problem appears to reflect a basic disturbed pattern of neurological organization." Thus he proposes a classification scheme of reading retardation based on etiology which includes two basic categories: 1) primary retardation or developmental dyslexia and 2) secondary retardation which includes all other causes of reading retardation, including brain damage.

Reading retardation resulting from brain damage is classified as secondary. In the case of brain damage, we have clear neurological deficits resulting from prenatal toxicity, birth trauma or anoxia, encephalitis, and head injuries.

Other causes of reading retardation classified as secondary include emotional and motivational factors, poor learning opportunities, poor vision and hearing, and other physical problems.

Critchley (*3*) agrees with Rabinovitch fundamentally. He differs only in that he uses dyslexia in both a general and specific way in the characteristically British fashion. Notice his uses in three consecutive sentences where the writer has italicized key words: "Most neurologists believe that a *form of dyslexia* exists which is organic in nature. This is not to say that other types of reading retardation do not exist, but the neurologic conception of *dyslexia* that exists in its purest form . . . *Dyslexia is constitutional* for two reasons. . . ." Thus, we see that whereas Rabinovitch reserves the term dyslexia for primary retardation, Critchley sometimes does the same *but* sometimes uses the term as a generic term for all forms of reading retardation.

The Random House Dictionary of the English Language (unabridged edition, 1967), defines dyslexia as "an impairment of the ability to read due to a brain defect." This use presumably includes the primary dyslexia of Rabinovitch *and* brain damage.

Many regard dyslexia not as a term indicating pathology but rather simply as the inability to read up to capacity or up to grade level without reference to etiology.

Clearly, in any discussion we must know in which way dyslexia is being used. In this paper, the writer will follow the use of Rabinovitch, using dyslexia to refer only to reading retardation caused by organicity other than brain damage.

The lack of biological or anatomical evidence

With respect to more basic biologic evidence in the study of persons with severe reading retardation, Buchanan (*1*) has stated that there is no anatomic locus of the brain which has been recognized with *certainty* as being functionally related to reading though several reports suggest the probability of the angular gyrus as the region. At the conclusion of his extensive survey of neuroanatomy and neurophysiology specific to reading retardation he summarized:

> Knowledge of representation of intellectual functions in the cortex is still vague, contrast studies of the brain are crude and electroencephalographic tracings are complicated and variable. Because of these difficulties there is yet no objective test that can display an anatomic or physiologic lesion underlying dyslexia.

He further noted that ". . . no one has recognized a chromosome or gene that is responsible for the presence of dyslexia."

Interestingly enough, despite the lack of biologic evidence, Buchanan nevertheless says that ". . . those trained in biology believe that dyslexia springs from a biologic fault. Although a specific gene has not been recognized, the available evidence supports the biologic explanation." In other words, he supports the notion that there is likely a biologic fault of some specific type, even though it has not been identified or isolated according to his own review of evidence.

In the absence of identifiable biologic evidence, how then is the case made for dyslexia? It is, in fact, deduced from one or a combination of lines of argument: 1) genetic findings, 2) exclusion, 3) the identification of so-called neurological soft signs, and 4) the effectiveness of special methods.

Genetic findings

To support the theory that dyslexia is genetically determined, two kinds of findings are offered: 1) studies that show more than one case of reading retardation in families and 2) studies that show boys to have the "pure type" of dyslexia more often than girls. From these studies alone, Critchley (3) in one discussion of the subject concluded: "Hence the neurologic position is that specific developmental dyslexia is a genetically determined constitutional disorder. This is extremely important because it means that developmental dyslexia arises independent of environmental factors."

The work of Hallgren is cited by Critchley as the most definitive in showing the genetic factor in dyslexia. In 276 cases, Hallgren is reported as having found reading problems in the families of 88 percent of his cases.

Of course, use of the studies of genetic occurrence within families and male vs. female incidence (*2, 3*) as a basis for establishing the existence of dyslexia has to be evaluated against alternative and reasonable hypotheses such as the following:

a. That the co-occurrence of reading retardation within a family is a function of a more generally shared limitation of experience, instructional opportunities, verbal capacity, or personality type.

b. That variability among boys is typically greater than among girls in many psychological and physiological characteristics (*15*).

c. That girls mature faster than boys.

d. That myelinization in the cortex of the angular gyrus of the brain is more likely to be unduly delayed for boys as compared with girls.

e. That sex differences in average performance and variability are culturally determined in part. For example, Preston (*13*) found German boys to be superior in reading to German girls in grades 4 and 6, and German girls showed more variability than boys.

The exclusion definition

Another basis used to support the existence of developmental dyslexia is a definition of this term by exclusion. "By definition," Critchley (*2*) says, "neurologists identify developmental dyslexia by eliminating all those children who are emotionally disturbed, who have perceptual defects, or who have low intelligence." In other words, if we can eliminate the so-called secondary causes as not relevant to the extent of reading retardation, developmental dyslexia must then be regarded as accounting for the problem. It is interesting to note the lack of reference in Critchley's definition to poor instruction. In his more comprehensive treatment of the subject of developmental dyslexia Critchley shows further his little concern for the influence of instruction when he accepts Eisenberg's definition of a dyslexic as one who ". . . is unable to learn to read with proper facility despite normal intelligence, intact senses, proper instruction, and normal motivation." Then Critchley says: "Eisenberg's definition would be improved if for 'proper' instruction he substituted the adjective 'conventional.'" Presumably Critchley's acceptance of "conventional" comes from the fact that a great majority of pupils do learn to read under usual circumstances.

The major weakness of this definition by default comes from the difficulty, if not impossibility, of eliminating the significant influences of psychogenicity, poor instruction, and other environmental factors (other than clear brain damage) from the picture. Since dyslexia cannot be observed directly, we are left to see it as if through a lens which is occluded in some indeterminate measure by these other causative and complicating factors.

Soft neurological signs

Critchley (*4*) has recently reported, contrary to the speculation of many, that there are no gross abnormalities to be detected in the dyslexic reader typically, i.e., no spasticity, no increased reflexes, no conspicuous abnormality in growth of physical habitus, no defects in constitutional tasks, no evidence of Gerstmann's syndrome, no clumsiness or lack of manual dexterity. On the other hand, he has found in "many cases" upon deeper probing "subtle defects" or soft neurological signs including lack of cerebral dominance, confusion regarding space and time, mild electroencephalographic dysrhythmias, abnormal eye movements when reading, minor color blind defects, and abnormal preferred direction of lateral gaze.

Orton (*11*) believed that there was a state of ambiguity in the cerebral dominance of the brain of some retarded readers. It was this underlying condition, he thought, that accounted for mixed laterality, left-handedness, and reversals in reading and spelling. Orton's term for dyslexia was "strephosymbolia" (twisted symbols) but it never caught on.

The fact that some retarded readers exhibit directional confusion, mixed dominance patterns, and so on, represents possibly the most solid base in making a case for the existence of dyslexia. Presumably, immediately underlying reading retardation are measurable substrata factors (to use Holmes' term) and a general integrative ability which are the foundation traits for success in reading, spelling, and writing. Soft signs are represented as symptomatic of the organic basis of reading disability. Now, if we were to postulate the existence of such soft signs without first observing them, the writer believes we should expect them to be qualitatively different from similar measurements taken with respect to the performance of the nondyslexic pupil. Further, we should not expect to find major differences in these characteristics among pupils in various school systems whose instructional quality differs. Gaskins, one of the writer's colleagues in the reading clinic at the University of Pennsylvania, in her study of directional confusion of pupils retarded in reading seems to be finding great differences in pupil responses from school system to school system.

In other words, if pupils who were severely retarded in reading merely differed in the degree to which they exhibited this soft-sign behavior, would we not have good reason to believe that we were merely looking at the low end of an expected distribution of the measured traits?

On the other hand, in an interesting study of the normality of distributions of reading ability, Larsen (*7*), in Denmark, found no normal curve in any grade. Instead he found curves which he construed to result from two separate distributions, one the normal reader and the other the word-blind. Replication of this research is needed. In any event, it will have to be determined whether such a curve truly represents two populations or some paradox.

Effectiveness of special teaching methods

There seems to be no agreement at the present time among outstanding leaders as to the *best* method for teaching seriously retarded readers. Fernald developed a technique and successfully used the method which put emphasis on the student's own language patterns. In this method, words are learned as wholes by a strategy which combines visual, auditory, tactile, and kinesthetic modalities. The Gillingham-Stillman method is heavily oriented toward learning individual letter-sound correspondences with emphasis on tactile kinesthetic learning. Cruikshank insists that such pupils need a program which feeds small doses of material to the pupil in a minimally distracting physical setting. Each of these and other methods claim success. When analyzed, the common element in each of the many alternative methods of treatment seems to be intensive, individualized instruction by well-trained teachers who help pupils experience success.

The theory of developmental immaturity

An alternative theory to the existence of a discrete *specific* syndrome of dyslexia might be entitled Developmental (or Behavioral) Immaturity. Central in this view are the four known characteristics which affect individual differences: 1) normality, 2) variation, 3) covariation, and 4) velocity (*12*). We have already illustrated the characteristic of *normality* by pointing out that traits which distribute themselves according to the normal curve, differing from one point to another only in degree, can hardly be regarded at any particular point as signifying some underlying biologic fault manifest as a specific dysfunction. Further we know that individuals *vary* from one another and within themselves from trait to trait. Moreover, these individual traits *covary* or interact with one another and with environmental forces as the individual functions as a total being, integrating these elements in complex ways. Finally, with respect to *velocity*, we know that individuals mature at rates which vary from time to time, providing periods of steady growth, plateaus, and spurts.

Thus, given the characteristics of individual differences it is postulated that the retarded reader is one whose accumulation of specific deficits or "lows" in trait performance are interacting as a delaying force in his maturation. Such a pupil's patterns are not regarded as symptoms of pathological signs. He manifests a syndrome in the sense of the coincidental occurrence of "lows" in traits underlying reading, spelling, and writing. In this view of things his specific performances in relevant behavior are *described* and *respected*. The *description* must be comprehensive enough so that we can be reliably aware of all of his unique characteristics as indicated above. *Respect* for these differences means that instructional programs must be comprehensive in scope and sensitive to the learner's level, rate, modality preferences, motivation, and so on. Failure to accommodate instruction to the uniqueness of the pupil would result in retardation. Such retardation is regarded as a function of lack of readiness on the part of the pupil and of poor instruction with consequent inefficiency in learning to read up to capacity.

Apparent differences in the two theoretical positions described may in part come from the different orientations and modus operandi of the investigators in the field. For example, the ideas supporting the *developmental dyslexia* hypothesis come largely from clinical specialists in medicine, psychology, and remedial education. Since retarded readers who come to these centers have complex problems, the study of these clients in depth in the cross sectional sense may reveal many correlated characteristics of low performance. Seeing so many of these clearly invites speculation as to the probable existence of a unique syndrome, one due to a specific rather than general biologic or constitutional element.

On the other hand, the *developmental immaturity hypothesis* derives from the work of specialists in medicine, education, and psychology who have studied their populations both *cross sectionally* and *longitudinally*. In such studies the interaction of the child's internal and external environment is more manifest.

Five research projects of the latter type which are concerned with describing the comprehensive longitudinal behavior of a representative population of pupils will illustrate the promise that might come from such studies in understanding extreme retardation in reading.

These five studies may be further delineated as *comprehensive assessment studies* and *comprehensive and personalized reading programs.*

Comprehensive assessment studies

Comprehensive assessment studies are concerned with describing the learner rather fully in terms of major variables which relate to present and future learning performance. The work of Ilg and Ames (8) and that of de Hirsch (6) and her associates illustrate this kind of research. The Developmental Placement Test of Ilg and Ames comes from their research in observing the changing developmental patterns of children at various ages and includes such subtests as writing name, date, address, and numbers; copying geometric forms including circle, cross, square, triangle, divided rectangle, and diamond; the completion of the incomplete man figure; right and left discrimination, visual discrimination, and visual memory; the number of animals named in one minute; and responses to the question—"What do you prefer to do at home and at school?" These tests yield a general developmental age score which is to be regarded as more significant than chronological age in assessing readiness for success in all academic learning, including reading.

In the de Hirsch study a generally representative group of 53 kindergarten-age children was tested on 37 variables thought to be related to success in reading, spelling, and writing. Ten of these (together called the Predictive Index) were found to be highly predictive of success in reading, writing, and spelling at the end of second grade. They include such subtests as holding and manipulating a pencil, the Bender-Gestalt Visuo-motor tests, Wepman auditory discrimination test, the number of words used in telling a story of the three bears, a category test in which the child is asked to produce the class names for three groups of words, the Horst reversals test, the Gates word-matching subtest, and word-recognition and word-reproduction tests.

Both the test batteries include tests of perceptual, motor, cognitive, and linguistic functioning. Further validation of these tests and similar test batteries is needed at two levels: first, with respect to their general ability to predict relative success of pupils in reading and other academic functioning and, second, with respect to their power to diagnose and prescribe differential instructional strategies.

Comprehensive and personalized reading programs

Studies of the achievement of pupils who have experienced comprehensive and personalized reading programs represent another needed type of research.

The writer reported in November 1966 at the National Conference on Dyslexia (*1*) a study of this type which was conducted in the Pennridge Schools, Bucks County, Pennsylvania. Among other purposes of this study, we were trying to determine if any pupils who have experienced five years of a comprehensive reading program of high quality would still be reading below the fourth reader level. We found that no *beginning sixth grader* with an IQ above 80 scored below the high third-grade level. Only two percent of the pupils read below fourth grade level. This work was based on the results of the Botel Reading Inventory, standardized reading tests, and the actual successful performance in readers used in the schools. In the latter criterion pupils had to be performing fluently in oral reading (95 percent or better on the average) and in comprehension (75 percent or better on the average). The average IQ of these pupils was 106. In a continuation of the study in the same school in 1967-1968, the previous year's findings were confirmed. In addition, pupils were tested this year on an informal spelling inventory. Only two percent of the pupils scored as low as the third grade level. Thus we have found no pupils "impaled on a primer" (as Preston once characterized the dyslexic child), when continuously offered an outstanding instructional program over a five-year period. In fact, no pupil was "impaled" even on a beginning third-reader level by the *beginning* of sixth grade.

We are now planning our next year's study. One of the writer's doctoral candidates, Patricia Guth, director of elementary education for the Pennridge Schools, will study next year's classes more intensively to determine if there are some specific qualitative patterns of performance which differentiate the retarded reader from the average and the more-able reader. Further, Guth will compare the performance of Pennridge pupils with those from a similar socioeconomic community whose reading program has been more typical of American schools, i.e., less comprehensive and less sensitive to individual differences. In this way we shall have an additional control on the influence of instruction as a factor in reading retardation.

In two monumental studies (*9, 10*), in which the characteristics and correlates of reading ability were analyzed for large samples of pupils who experienced excellent comprehensive reading programs, no support was found for the notion of dyslexia by these researchers.

The Morris study (*10*) of over 8000 pupils in Kent County, England, revealed ". . . that the poorest readers were not in any reasonable interpretation of the term a neurological problem, and that the study as a whole lends little support to the idea that 'specific developmental dyslexia' is an identifiable syndrome distinct from 'reading backwardness.' In other words, if word blindness exists as a condition which cannot be treated by good teaching within the state educational system, it must be a rare condition indeed."

The Malmquist study (*9*) of first and fourth grade children in Sweden reports as follows:

> The results of the investigation show that none of the errors in reading recorded was made by only *one* group of readers. Every type of reading error is found among poor, medium, and good readers. Consequently, we consider that our hypothesis that differences between poor, medium, and good readers, with regard to errors in reading, are rather of a quantitative than a qualitiative character has been verified in our study.

Summary

This paper explored two theories of severe reading retardation: The Theory of Developmental Dyslexia and The Theory of Developmental Immaturity as the basis for considering the topic:

Dyslexia: is there such a thing?

It was first noted that dyslexia as a term has many synonyms and that it is used in a great variety of ways. This ambiguity leads to much confusion if those communicating about the prob-

lem do not clearly define the way in which they are using the term. For the purpose of this paper, dyslexia was defined to mean a postulated, organically based reading disability.

The Theory of Developmental Dyslexia implies organicity. The case made for such a biological or anatomic defect underlying serious reading disability is made indirectly since there is no anatomic lesion nor chromosome or gene which has been found to be responsible for dyslexia as yet. Instead dyslexia is usually deduced from 1) genetic findings, specifically the occurrence within families and the greater incidence of boys with serious reading disabilities; 2) by exclusion of other causes of reading retardation; 3) by the identification of soft neurological signs; and 4) by the effectiveness of special methods.

The Theory of Developmental Immaturity is based upon the four interrelated aspects of individual differences: normality, variation, covariation, and velocity. In this view, reading retardation is explained as a function of a syndrome of specific deficits or "lows" in trait performance which are interacting as a delaying force in maturation. The lack of a comprehensive, individualized instructional program sensitive to these aspects of individuals is regarded as basic in accounting for reading retardation.

It was noted that evidence is not yet available to enable us either to accept or reject either theory.

Research that is both cross-sectional and longitudinal was proposed to give us more insight into the problem of serious reading retardation. These studies are needed in the areas of assessment and developmental or preventive reading programs.

In addition we need studies in which particular methods are related to syndromes of personality and performance characteristics of retarded and normal readers. One such study is now being conducted at the reading clinic, University of Pennsylvania, by Margaret Willson. She is testing the hypothesis that the following matches are desirable between primary cause of reading disability and instructional mode: 1) educational factors predominate—basal reader; 2) psychological factors predominate—linguistic readers; and 3) neurological factors predominate—Fernald language experience approach.

A final note

The writer is preparing a monograph on dyslexia—a "state of the art" publication commissioned by ERIC/CRIER and IRA. This research report will analyze 1) the classical literature, 2) the relevant research literature indexed by ERIC/CRIER from 1950-1966, and 3) the periodical literature for the years 1963-4-5 on this subject. The latter group of several hundred items have been located, abstracted, and indexed by Jane Levine at the University of Pennsylvania Reading Clinic. Her abstracts will be included in the monograph.

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Pro-Challenger: GILBERT B. SCHIFFMAN

Maryland Board of Education

WHEN THE WRITER first received the invitation to present the pro side of a discussion on Dyslexia—Is There Such a Thing? he thought that he would be championing a small group of educators and physicians fighting for a belief they have upheld for many years. In the past few months, however, several magazines and books have published articles on dyslexia, national and international dyslexia committees have been formed, and newspaper articles have been printed on this subject.

Dyslexia exists but it is an indefinite concept

It would appear that another bandwagon effect is taking place. This predictable swinging pendulum that we have in education is moving again. The writer does not want to push all the way to the dyslexia side so that every child with an F in reading is given the fashionable dyslexia label. We always seem to need a trash can—overaggressive mothers, immaturity, and now dyslexia. While dyslexia no doubt exists, it is difficult to defend this concept which cannot be defined, attributed to any specific etiology, estimated as to its prevelance or frequency, identified with a particular syndrome, or remediated with a specific technique or school organization.

Leon Eisenberg, former professor of child psychiatry, at a conference on dyslexia in 1962 applied the term *specific dyslexia* to a situation in which a child is unable to learn to read with proper facility despite normal intelligence, intact senses, proper motivation, a culturally adequate home, freedom from gross neurological defect, and proper instruction.

Many of us could easily live with this definition if we could change "proper instruction" to "conventional instructional techniques and/or conventional school organization."

In fact, the World Federation of Neurology's Research Committee on Dyslexia and World Illiteracy which met in Dallas, Texas, on April 3-6, 1968, supported the following definition: A disorder in children, who, despite conventional classroom experience, fail to attain the language skills of reading, writing, and spelling commensurate with their intellectual abilities.

Articles in *The Journal of Learning Disabilities* and elsewhere set the proper tone in commenting that scholars all over the world are choosing to ignore the dissenters who demand overly neat categorizations of a complex disability. We believe that dyslexia is a mosaic that demands flexible multidisciplinary efforts for diagnosis and remediation whatever its etiology. There does not appear to be one single syndrome nor any reliable data on which to base a secure estimate of its prevalence. Estimates range from 2 percent to 20 percent of our total school population. Of course, good research is necessary and should be encouraged to help us find the answers to all of the questions concerning this disability. It is necessary for effective early identification. But let us not spend all of our time, funds, and energy arguing about the name, definition, cause, or syndrome. Let us find out the characteristics of seriously retarded remedial cases and do something about them. This paper will discuss a study directed toward these purposes.

A study of severe remedial cases

Teachers everywhere bear witness to the presence of a number of "normal" children in their classrooms who do not learn to read by the techniques which are successful with the majority of their classmates or peers. Some of these disabled readers do not even learn with efficiency as expected within a corrective tutoring program. Often these pupils become our disruptive children, our dropouts, our emotionally disturbed. Often dedicated and talented teachers become frustrated and worried as they fail to find a way to reach these students.

In an attempt to better answer this question two hundred and forty of these remedial disability cases (235 males and only 5 females) have been studied in an experimental project in an effort to clarify the nature and characteristics of such children.

Each of these pupils has the following characteristics in common:

1. Evidence of near average, average, or higher than average intelligence as determined by the WISC.
2. Severe reading retardation with word recognition problems as determined by informal and standardized achievement tests.

The remainder of this presentation will concern itself with the study and its findings and implications.

It is appropriate and necessary to point out at this time that one of the major problems inherent in the identification of reading disabilities is that traditionally educators, physicians, and other professional workers concerned with the problem have relied almost exclusively upon capacity and achievement scores in standardized tests. A severely retarded reader is considered to be a pupil retarded two or more years by standardized tests. This rule of thumb screening criterion can be dangerous and misleading. Standardized tests of reading achievement do not always indicate the pupil's instructional reading level.

In our study, reading achievement scores compiled within a four-month period before instruction was initiated demonstrated the wide variation between standardized and informal tests. There appears to be about a two-year difference in favor of the standardized tests between standardized and informal evaluations.

Table 1

Mean Reading Grade Level Scores of the WRRA, Stanford, and Informal Tests According to the Three Treatment Groups

	Elementary			*Secondary*		
Tests	*Remed.*	*Correc.*	*Devel.*	*Remed.*	*Correc.*	*Devel.*
WRRA	3.20	2.97	3.32	4.89	5.07	5.15
Stanford	3.05	2.93	3.16	4.45	4.90	4.59
Informal	0.98	1.00	1.03	2.20	2.23	2.28

The picture is just as confusing concerning capacity evaluations. Most of the measuring instruments are tests that require reading, yet often they are given to students who cannot read or who have not learned to read effectively. There is considerable variability between the different capacity measuring instruments. There also does not appear to be a typical profile of Wechsler's subtests for these remedial readers. The Performance Section is significantly higher than the Verbal Section.

Table 2

Mean Scores for the Second Grade California Test of Mental Maturity, the Fourth Grade California Test of Mental Maturity, and the Wechsler Intelligence Scale for the Two Hundred and Forty Remedial Readers.

	Elementary			*Secondary*		
	Remed.	*Correc.*	*Devel.*	*Remed.*	*Correc.*	*Devel.*
CTMM—Grade 2	85.60	78.35	88.98	95.28	81.15	93.58
CTMM—Grade 4	88.80	91.30	86.60	90.38	81.75	91.58
FS—Wechsler	96.00	96.00	96.23	96.00	96.00	96.00
VS—Wechsler	96.56	94.25	91.45	93.40	93.40	91.03
PS—Wechsler	100.58	99.38	102.56	99.48	99.50	101.50

The intercorrelations of the tests in the WISC for the 240 remedial readers were considerably smaller than Wechsler's standardized expectations. In fact, twenty of the fifty-five intercorrelations in the study were negative. A factor analysis might reveal some cluster, but the present data do not indicate a specific profile.

Table 4 presents a picture of the average remedial reader found in the study. The pupil is a male with one sister and one brother who entered the first grade at the chronological age of 5-11 years. He had a poor reading readiness score which indicated a delay in the initial reading experience. He is in the sixth grade reading below the second grade level and has repeated somewhat less than one time. He has a severe word recognition problem with a limited sight vocabulary and few word analysis skills to unlock unknown words. His health, attendance, and discipline are satisfactory. There does not appear to be any significant Wechsler subtest profile. Spelling achievement scores were below reading and arithmetic achievement grade levels as determined by the Wide Range Achievement Test.

Table 3

Wechsler's Standardization

	I	C	A	S	V	DS	PC	PA	BD	OA	Cod
Comprehension	.61										
Arithmetic	.59	.46									
Similarities	.67	.61	.50								
Vocabulary	.74	.60	.46	.66							
Digit Span	.39	.28	.40	.34	.38						
Picture Completion	.35	.25	.26	.36	.31	.23					
Picture Arrangement	.35	.31	.25	.44	.41	.18	.35				
Block Design	.48	.33	.35	.45	.42	.29	.51	.42			
Object Assembly	.29	.13	.20	.31	.33	.13	.55	.42	.63		
Coding	.38	.32	.34	.33	.37	.24	.23	.35	.35	.38	

240 Clinically Retarded Readers

	I	C	A	S	V	DS	PC	PA	BD	OA	Cod
Comprehension	.37										
Arithmetic	.37	.15									
Similarities	.07	.10	.13								
Vocabulary	.59	.47	.12	.03							
Digit Span	.08	–.05	.18	–.11	–.12						
Picture Completion	.13	.15	–.16	–.07	.06	.01					
Picture Arrangement	.01	–.05	–.17	–.03	.04	–.12	.14				
Block Design	–.21	.08	–.18	.13	.07	–.02	.22	–.11			
Object Assembly	–.29	.01	–.21	.02	–.10	.09	.26	–.12	.58		
Coding	.01	.11	.10	.11	.17	.05	–.40	–.04	.10	–.16	

Psychological testing suggested the possibility of an organic physiological contributing factor in seventy of the remedial retarded readers. The high incidence of possible neurological disability that appears in the population of the study (29 percent) is not typical of its distribution in the normal population.

Specifically, this research attempted to compare the reading improvement of a) remedial pupils who remained in the developmental reading program, b) remedial pupils who received corrective reading instruction, and c) remedial pupils who received remedial reading therapy. The study compared the reading improvement of the three groups of pupils after one year of in-

Table 4

Variable	*Average*	*Comments*
Sex	Male	5 females
No. of male siblings	1.1	
No. of female siblings	1.0	
Place in family	2.3	
Age entering first grade	5-11	
Readiness score	37	poor—delay
Grade—1961	6.1	6-10 months
Instructional Reading Level:		
Informal Tests	1.6	
Standardized test:		
Stanford	3.8	
WRRA	3.2	
WRSA	2.5	
WRAA	4.2	
Capacity Evaluation:		
CTMM—Second grade	90.44	
CTMM—Fourth grade	89.58	
WISC—Full Scale	96	
Verbal	91	
Performance	101	
Subtests:		
I 8.4 PC 10.9 DS 7.3		
C 9.3 PA 10.7		
A 8.3 BD 9.9		
S 9.2 OA 10.8		
V 9.1 Cod 8.7		
No. of grades repeated	.78	
Attendance rating	1.5	3 point scale:
Health rating	1.3	good satisfactory poor
Discipline rating	1.4	/1 /2 /3

struction and again one year after termination of instruction. The following matter will define these programs.

The developmental program involves systematic instruction at all school levels and in all content areas for those who are developing language abilities commensurate with their general capac-

5

ity levels. This developmental phase is the responsibility of every teacher, affects all the pupils, is provided for in the regular curriculum, and is a continuous ongoing process.

A corrective reading program is for children without an associative learning disability. The children are usually taught in small groups in special classes. Corrective reading is also taught in the classroom at times. A corrective program is needed for children with poor language skills or with a meager background of experience. The child may be unable to pronounce words, or he may use words readily without comprehending their meaning.

Remedial reading programs are essentially clinical programs for children with severe reading difficulty who are unable to make appropriate associations between visual (printed) symbols and their experiences.

These cases are frequently characterized by associative learning disability, inadequacies in memory span, deficiencies in concept and formation, and neurological or emotional complications. Pupils with these problems demand individual and small-group instruction on a clinical basis by specially trained personnel. It is for these that the tactile and kinesthetic techniques appear to be especially helpful.

The eighty pupils in the remedial program were given the complete remedial program throughout the 1961-1962 school year. This program included appropriate pedagogical remediation, individual or group psychotherapy, and family counseling. The eight pupils in the corrective program received the standard corrective program at their local schools. The eighty pupils in the regular developmental program remained in their classrooms and received no additional instruction outside of the normal developmental reading program.

During the 1962-1963 school year the pupils who had been in the remedial and corrective programs returned to the regular classroom developmental reading program.

Results of the study

Reading evaluations were administered at the beginning of the study in September 1961 and at the end of the remediation period in June 1962. They were again tested at the end of the study in June 1963.

At the conclusion of the two-year study, the writer looked at the frequency distribution of an informal "self-concept" rating among achieving and nonachieving pupils. For the data, the distribution differed significantly between the achieving and nonachieving groups (chi-square equaled 11:341 for 3 degrees of freedom). The achieving group had a higher self-concept rating than the nonachieving groups. In addition no pupils who made at least two-years' progress in the two-year study had a self-concept rating below average.

The assignment of values to oneself is probably closely related to the values of others who are significant in one's life. The child probably evaluates and values himself as he feels that these "significant others" evaluate him on the basis of their actions toward him. Included in this process is the process of goal-setting that is constantly operating, the continuous comparing of the goal to which one aspires, and the present performance one feels he is achieving.

Capacity Evaluation Scale

Mentally defective	Borderline	Dull	Average	Bright Normal	Superior	Very Superior

1. Over 78 percent of the retarded readers had a subtest of the WISC (Verbal or Performance) that indicated normal potential.
2. 39 percent of the Full Scale I.Q.'s indicate average or better ability.
3. Only 7 percent of the pupils had average ability, according to the elementary teachers.
4. Only 14 percent of the pupils had average ability, according to the self-rating of the children and the parents.

The author believes that many retarded readers, particularly secondary pupils, have such a low-value system, such a negative level of aspiration, such a poor sense of self-worth as far as academic achievement is concerned, that they cannot succeed in school. Even if we are successful in teaching them their basic elementary reading skills, their value system is so warped that they cannot utilize or maintain these skills.

To test this hypothesis, a group of 84 functional junior high slow learners who had been placed in low seventh grade classes for children with low capacity (below 90 on a group I.Q. test) and achievement (below third grade reading level) was studied.

Parents and former elementary teachers were also consulted. The 252 people were asked to check a rating scale. They were asked to check the place on the continuum where they felt the pupil was located insofar as his capacity to achieve in school was concerned.

The findings which pertain to the major purpose of the study were as follows:

Table 5

		Elementary			*Secondary*	
Year	*Remed.*	*Correc.*	*Devel.*	*Remed.*	*Correc.*	*Devel.*
1961-1962	1.47	.50	.20	1.35	.69	.09
1962-1963	.80	.19	.18	.29	.20	.25
1961-1963	2.27	.69	.38	1.74	.89	.34

1. At the close of the one-year instructional program and at the close of the one-year follow-up, elementary pupils in the remedial group had made greater improvement in reading than the pupils in the corrective and developmental program. The difference was statistically significant at the one percent level.
2. At the close of the one-year instructional program elementary pupils in the corrective group scored higher in reading achievement than the elementary pupils in the developmental program, but the difference was not statistically significant at the one percent level. There was no difference between the corrective and developmental groups at the end of the follow-up year.
3. At the close of the one-year instructional program, secondary school pupils in the remedial group had made greater improvement in reading than the pupils in the corrective and developmental program. The difference was significant at the one percent level.
4. At the close of the one-year instructional program, the secondary pupils in the corrective group scored higher than the pupils in the developmental group, and the difference was statistically significant at the one percent

level. There was no difference between the growth of the three groups at the end of the follow-up year.

Since the reading growth of the remedial pupils taking corrective remediation during the 1961-1962 school year was limited (elementary .50 and secondary .69), it was interesting to note that the average growth of corrective pupils receiving the same remediation during the same period was elementary 1.84 and secondary 2.02.

It is apparent that the average corrective pupil receiving corrective remediation made a great deal more progress than the average remedial pupil receiving corrective instruction.

Implications to teachers

The intent of this paper is not to discuss pedagogical procedures but to stress the point that remedial readers when exposed to corrective procedures do not make satisfactory growth. These remedial pupils who have failed to progress under ordinary classroom methods must be taught not by repetition of techniques that have failed but by new ones carefully planned to overcome individual differences.

It is the hypothesis of this paper that there exists a group of retarded readers who need a special program of remediation. Accurate diagnosis is necessary in order to place the pupil in the correct program. Remedial pupils exposed to corrective or developmental pedagogical procedures make little progress. For those individuals with specific reading disabilities special methods are necessary utilizing word-learning techniques which allow them to use tactile and/or kinesthetic clues as well as visual and auditory clues.

Failure by teacher, parent, or physician to recognize the key problem early will have devastating results on the value system and self-concept of the retarded reader. However, it is not easy to identify these pupils. Standardized tests of achievement and capacity cannot be expected to yield accurate results for children with severe reading problems since a degree of verbal facility is necessary simply to understand testing directions and to read the questions.

There is no one "magic" syndrome to identify these children. They have only one factor in common aside from their reading difficulties—only one consistent factor—and this is inconsistency.

What implications does all of this have for teachers and educators? First, they must realize that each child is an individual who brings different skills and needs to the learning situation. Secondly, teachers must realize that they still do not have the scientific "know how" always to understand why Johnny lacks certain capacities and skills.

The writer does not believe that any one discipline—whether medical or educational—or any one technique will by itself solve these problems. No one discipline will be able to answer these questions: What is the etiology of these disabilities? How can schools make an early diagnosis? What are the best pedagogical procedures in remediating these specific language disabilities?

Emphasis must be placed upon early identification and placement in the proper program before an individual's problem becomes too complex. If the child cannot be identified and remediated at the elementary level, what chance does he have in the complex secondary program? No longer can we afford to wait for the child to be referred for special help only after continual academic failure, "atypical" behavior, or overaggressive parents. Early identification and preventive practices are the only solution.

It is hardly necessary to point out that all children need be given an opportunity to read. It does seem appropriate to reemphasize that all children cannot learn to read by the usual pedagogical techniques that are so successful with the majority of pupils. Teaching techniques must be adjusted to the individual child—not the child to the techniques.

In an age of specialization we have not cultivated the interprofessional communication and exchange of ideas which are necessary for our mutual understanding of these complex problems. But an interdisciplinary approach, investigating and refining diagnostic and pedagogical techniques, is the only logical attack.

Specifically, education is faced with three major responsibilities:

1. Educators must develop the best techniques to identify which students cannot learn to read with normal techniques that are so successful with most children. This task can only be accomplished in an interdisciplinary manner.
2. Educators must develop the most effective pedagogical procedures for all children who cannot learn by normal techniques.
3. Educators must develop the format or school organization to implement the preceding responsibilities.

If we continuously reevaluate and improve what we have, some day we will find what is needed—successful programs to rehabilitate the lost children and give every child in school an opportunity to develop his language abilities to the highest level of his capacity.

Con-Challenger: GLADYS NATCHEZ

City College of the City University of New York

THE TERM *dyslexia* is used by many as a catchall for various kinds of reading difficulty. However, most authorities use it to designate a reading disorder that results from a dysfunction of the central nervous system or an actual brain lesion (*6, 10*). Confusion occurs because there are children with reading disabilities which are caused by brain damage and others with brain damage who show no difficulty learning to read. Then too, there are conditions which are closely associated with brain injury, such as neurological disorganization, maturational lag, structural brain deviations, and the like, which may or may not affect language development and reading. Determining the presence of frank brain damage is comparatively easy, but it becomes increasingly delicate to distinguish minimal cerebral injury as distinct from delayed development (*13*). This identity by no means ends the confusion. For purposes of brevity, it is advantageous to classify factors that impair learning into four major categories: those which show central nervous system disorders; those caused by impairment of the peripheral nervous system; those due to inadequate socioeducational conditions; and those resulting from psychological disturbance.*

The substance of this paper concerns the interaction of these forces. Although it is conceded that there is indeed such a thing as dyslexia, its course is influenced significantly by the interrelationships of various causative components. The interaction of these components is far greater in complexity than are any of the elements taken individually (*1, 8, 15, 16*). Thus the important question in dealing with dyslexia is how the reading disorder is embedded in and affected by the tangential pressures surrounding it.

Despite the wealth of investigations and the recognition of multiple causation, few researchers have shown the intricate interaction of separate components. This lack is due partly to the complexity of the problem and partly because most children have suffered at least one or more years of failure before they come for thorough examination. By this time the factors are so intertwined that we do not know which ones take precedence. For instance, did the neurological difficulty cause the failure which in turn caused emotional disturbance? Or did the psychological problem intensify the developmental difficulties? Did exposure to poor teaching impede the integration of cognitive factors? Did unfavorable home and school conditions heighten the conflicts in an unusually sensitive child?

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*Intellectual deficits are not considered here since reading difficulty is defined in terms of potential; i.e., achievement which is significantly below intellectual ability constitutes a reading disability.

Let us examine two boys in first grade (age 6, IQ average) who had similar diagnoses and follow them to sixth and seventh grades, respectively. Both boys were referred by their separate schools for psychological evaluation. It so happens that, in turn, they were referred to the identical neurologist. Both had normal intelligence. To summarize the psychological examination briefly, both boys had a preponderance of intrapsychic conflict, poor self image, and repressed anger.

Results from the neurologist's examination showed that each suffered from a dysfunction of the central nervous system which affected visual abilities and motor coordination. One of the boys, whom we shall call Trevor, displayed difficulty with auditory discrimination as well.

When the parents of the first boy, called Baxter for convenience, were apprised of the results, they were disbelieving and angry. They blamed the school for his learning difficulty. The mother said that she had no trouble with him in his early years at home. She refused to have him undertake psychotherapy (although she did enter analysis herself) and considered it the school's responsibility to teach him.

The school did what it could; the reading specialist worked individually with Baxter; his classroom teacher devoted extra time to him each day. When he was in third grade and remained at a beginning reading level, he was placed in a special class for slow learners. His mother kept complaining, but the school staff claimed that they were doing their best. By seventh grade, Baxter was reading at third-grade level. He had been uncooperative through the years, but by December of seventh grade, he rebelled with fury. He claimed that he was not a mental case or an idiot and was simply not going to attend the special class any longer. The boy went through a period of truancy which forced the parents into further consultation. After weighing many alternatives, Baxter and his parents decided that he should go away to boarding school. When last contacted, he was in eighth grade reading at fifth-grade level. His attitudes had improved, and the teachers were optimistic regarding further progress.

Let us leave Baxter for a moment and take a look at Trevor. When his parents learned about the nature of his psychological and neurological involvement, they became apprehensive. They had high aspirations for the boy. The father was a doctor; the mother, a school teacher. Although nothing had been mentioned regarding future achievement, they worried that he would not be able to complete college. Despite several counseling sessions (they had postponed the idea of psychotherapy for Trevor or themselves), they continued to apply subtle pressure for achievement. However, they were genuinely concerned and went a long way toward understanding Trevor and lending their support. By second grade, he had accomplished little, and they decided to enroll him in a Montessori school. Here he made decided progress which strengthened him academically and emotionally. This success in turn pleased the parents who relaxed their pressure to a great degree. Trevor continued to make solid progress through the years, and now in sixth grade he is reading at approximately sixth-grade level.

In examining these two cases in a little greater depth, we may begin to see the interplay among constitutional, psychological, and environmental forces. First, we can infer that the similar organic and psychological condition in both boys restricted their learning process, although Trevor had the additional problem of auditory difficulty which Baxter did not. How much or in what way did the parents' attitudes and the school's role contribute other features?

In Baxter's case, his mother found it most difficult to accept him or even allow any expression of individuality on Baxter's part. The mother herself reported that she felt so guilty toward him that she forbade him to criticize her. Part of the guilt seemed centered around her reluctance to have another child. From the inception of her pregnancy, she wished she were rid of him. In his early years, her resentment dwindled. He proved to be little trouble as a youngster, and she was able to control him to her own satisfaction. When he became a school problem, however, her pent-up resentment returned. Despite her discussions in psychotherapy, she continued to reject and rail at him. In a way, he fulfilled her forebodings that she never should have "born him in the first place." This play on words is intriguing for one might well have wondered from the start how long Baxter could have borne her abuse.

With regard to his teachers who seemed to make appropriate provision for Baxter's difficulties, his parents continued their criticism of school policy. This act may have caused sufficient antagonism among the teachers (without their necessarily being aware of it) to cause minimally effective instruction. All these forces intensified Baxter's problem and undoubtedly interfered with optimum use of those assets which he possessed.

In Trevor's case, parental and school attitudes were more benign. Despite subtle pressure for progress, his parents were willing to cooperate with the school and to help Trevor when he needed it. They kept a watchful eye on him and did not sabotage the teachers' efforts. These factors seemed to mitigate the learning problem, and by sixth grade he was able to achieve in school commensurate with his ability.

In comparing the two boys, one could say that the attitudes of Baxter's parents toward him and the school resulted in a serious hindrance. Even though he had somewhat less central nervous system involvement and his mother consented to undertake psychotherapy to clarify her attitudes, Baxter made very little progress through the years. In contrast, Trevor benefitted from a more favorable management of his problems.

There is no question that this summary is a simplified version of all the possible interactions. Certainly Baxter's parents wanted the best for him, too. Indeed, in reporting on his early years, they waxed enthusiastic about his lovableness and charm. But they could not tolerate his school failure. For whatever reasons, they could not demonstrate the magnanimity and understanding that Trevor's parents did when this failure occurred. Without question, there must have been many moments when Trevor's parents lost their patience and hope. But the fact remains that two boys with comparable problems showed a marked contrast in achievement, the one remaining a school failure for years and the other reaching a reasonable degree of proficiency.

Needless to say, this sparse presentation is, of necessity, suggestive rather than conclusive. Many other possibilities can accelerate or minimize a reading difficulty. One major factor in cases of neurological impairment concerns the discovery of regeneration of neurons within the central nervous system, even in adult tissue (*9*). This factor suggests that the reading problem can diminish through the organism's growth. There is also the matter of compensation. Many investigators suggest that the organism can bypass inadequate components and develop competent ways of functioning despite handicap (*3, 7*). Finally, the growth of the child is a complex, dynamic process subject to constant change. Not only does the organism gain in dexterity and integration, the nature of development changes. As Murphy (*11*) puts it: "Man, as a result of . . . discovering more and more about his nature is undergoing a change himself." Likewise Vygotsky (*18*) states that development is "not an innate, natural form of behavior but is determined by a historical cultural process. . . ."

The significance for any child, including one with brain injury, maturational lag, or emotional disturbance is obvious: one can begin to understand him only by being cognizant of the interaction between organic components, the child's own personal or psychological world, and the environment in which he lives (*14*).

Although investigations of the interaction between organic factors and the individual's psychological and cultural environment are few, two recent studies address themselves to the problem. One by Craviolo, et al (*2*) investigated the relationship between nutritional growth and neurointegrative development. It was assumed that significant lags in maturation of the nervous system and in mental development may occur in children who have suffered from malnutrition in early childhood. The investigation considered that intersensory performance, as measured by visual, haptic, and kinesthetic sense modalities, would have a significant association with social impoverishment. The striking result was that although such impoverishment was kept constant, neurointegrative function was significantly better developed in those children whose mothers had the higher educational level. Apparently the greater desire of better educated mothers to nurture their children more fully and to resist those traditional customs which were detrimental to the child's growth enabled their children to develop a higher degree of intersensory functioning. This conclusion implies that their children would have least difficulty in school learning.

The other study investigated individuality in infants. Thomas, et al (*17*) examined eighty infants during their first two years of life to determine whether children are discriminably different in their behavior patterning and, if so, whether this pattern continues to characterize the child later on. Such traits as activity, adaptability, approach, intensity, distractibility, and so on were observed. They found evidence of identifiable primary patternings, but these patternings were in turn reactive to the particular environment. It should come as no surprise that it was considerably easier for the mother to care for a responsive, cheerful child than one who was moody, cranky, and aloof. Naturally, the opposite obtained also; enthusiastic, concerned mothers fostered satisfied children. Results of such interaction was particularly spectacular in sets of twins where the mother's response to the infant was to a considerable degree a function of the child's primary characteristics which at the same time influenced his parent's immediate and persistent attitude toward him. The circular result needs no elaboration.

These two studies plus the growing body of information on child development (*5*, *12*) suggest that the interaction of constitutional, psychological, and environmental factors is of primary concern. To see either neurological involvement, psychological disturbance, or evironmental stress as the major cause of reading disability would be to assume causality and to ignore coincidence. To be unaware of the ubiquity of neurological and psychological signs in all children with or without learning difficulties or to ignore that some children with reading difficulty manifest a minimum of obvious symptoms is gross misinterpretation of the data (*4*).

It would seem sensible to view the reading difficulty as a symptom which may be due to a variety of factors, such as, brain dysfunction, biological variation, deviate maturation, developmental delay, emotional disturbance, or deficient socialization. In any child, some, any, or all of these factors may be acting in concert or in conflict. In most cases, it will be impossible to assign etiology with any degree of certitude, particularly if the presence of interaction among components is ignored.

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REMEDIAL READING has become an exceedingly active area of reading instruction. As a result, new theories of diagnosis and treatment are continuously evolving. Among these new theories are the Delacato theory of neurological integration, Kephart's theory of motor and perceptual training, Frostig's theory of specific perceptual training, and the drug treatment theory applied in studies conducted by several investigators. Each of these theories will be described, and research concerning each one will be presented and evaluated in the scholarly papers that follow.

What About Special Theories of Teaching Remedial Reading?

ALBERT J. HARRIS
City University of New York

MAJORITY OPINION among remedial specialists has for many years favored the policy of beginning remedial reading by using perceptual and memory abilities which are normal or least impaired and, while the child is learning by a method with which he can achieve some success, working to strengthen those perceptual and associative abilities that are particularly weak. Major emphasis has been on capitalizing on strengths with minor emphasis on building up areas of weakness.

The contrast between the general remedial viewpoint and a newer point of view has been clearly stated by Silver and Hagin (39):

> Our initial concept had been that compensation was a basic principle; i.e., after assessing perceptual assets and deficits, we should train in the areas of greater perceptual strength, via the most intact modalities. Results of the follow-up studies, however, suggest that this technique does not appear to enhance perception or to effect lasting improvement in reading. Efforts now are directed to the stimulation of the defective perceptual areas. This is almost a complete reversal of our earlier approach. Our purpose now is really to enhance cerebral maturation, to bring neurological functioning to the point where it is physiologically capable of learning to read.

This paper will attempt to explore several new approaches to remedial reading which share the viewpoint expressed by Silver and Hagin, to review the research currently available concerning them, and to arrive at tentative conclusions concerning their readiness for widespread adoption.

The writer had originally hoped to be able to include, under "special methods," those that attempt to simplify the reading task by using special alphabets, applications of programed instruction and reinforcement psychology, and various forms of psychotherapy. However, limitations of time and space have made it necessary to limit the scope of coverage.

Most of the approaches to be discussed agree with the statement of Krippner (*25*): "Often a program of perceptual training, dominance establishment, and/or motor coordination improvement is needed before reading improvement will be helpful." The four major approaches to be discussed place emphasis on 1) developing neurological organization 2) establishing a firm motor and perceptual base, 3) developing specific perceptual skills, and 4) using drugs to improve the learner's accessibility to instruction.

In attempting to appraise any new approach one must realize that the first efforts to study the value of an innovation are usually case reports or small-scale and poorly controlled pilot studies which may indicate whether the procedure is worth more careful evaluation—but which cannot do much more. An everpresent danger is the placebo effect described by McDonald (*29*)—the power of positive suggestion which tends to enhance the effects of any innovation when used by its creator or by a devoted disciple. A second danger is the Hawthorne effect, the built-in advantage that almost any new experimental procedure has over the routine and comparatively unglamorous procedure assigned to a control group. A third problem is that of broad generalization from results obtained with small groups of doubtfully representative subjects over a short period of time. A fourth problem in evaluating the evidence is the researcher's temptation to use a statistical method which tends to maximize the possibility of finding a statistically significant difference, whether it is the most appropriate way to treat the data. In reviewing the evidence the writer has tried to keep these possible sources of error constantly in mind.

One must keep in mind, also, that as yet there is no good statistical evidence on the frequency of neurologically based reading disability or the percent of retarded readers whose problems fall into this category. Recently Morris (*30*), in a large-scale study, reported that ". . . the poorest readers were not in any reasonable interpretation of the term a neurological problem, and that the study as a whole lends little support to the idea that 'specific developmental dyslexia' is an identifiable syndrome distinct from 'reading backwardness.' In other words, if 'word blindness' exists as a condition which cannot be treated by good teaching within the state educational system it must be a rare condition indeed."

Nevertheless, there are many specialists in learning disabilities who believe in a special condition caused by heredity, severe environmental deprivation, or brain damage which makes it extremely difficult for some children with otherwise normal intelligence to learn to read. Among the characteristics stressed as frequently found in this group are poor visual and auditory perception, poor ability to make visual-auditory associations, and directional confusion; distractibility, motor restlessness, clumsiness, and short attention span are reported in many cases (20). Most of the special remedial methods have been advocated especially for this subgroup of disabled readers.

The Delacato approach: neurological integration

Delacato has explained his theoretical basis and remedial procedures in three books (*8*, *9*, *10*). Obviously only a very sketchy summary can be given here. Very briefly, he believes that in some children a failure to achieve neurological integration below the cortical level of the brain is basic and must be corrected by such activities as sleeping in a particular position and learning to crawl and creep properly. When subcortical integration is present or has been developed, the major problem is lack of clear and consistent dominance of one cerebral hemisphere over the other. A variety of treatment procedures have the common purpose of strengthening the consistent use of the dominant hand and compelling the child to rely on the eye on the same side as the dominant hand. Among the precedures used are eliminating music, occluding one eye to force reliance on the other, creeping, crawling, and so on. Once neurological integration has been achieved, the child is said to learn to read by normal developmental teaching methods.

In his books Delacato has presented brief versions of fifteen studies, for several of which he did the statistical work on data supplied by others. A careful analytical review of these studies has recently been made by Glass and Robbins (*18*), who analyzed each of the studies in detail, considering research design and statistical treatment. Their conclusions are summarized in the following quotation:

> Twelve experiments are analyzed in light of the controls which were lacking in their execution and the shortcomings of the reported statistical analysis. Serious doubts about the validity of any of the twelve experiments are raised. An analysis of correlation studies reported by Delacato reveals a conclusion quite contrary to the implications drawn by him from the data. Without exception, the empirical studies cited by Delacato as a 'scientific appraisal' of his theory of neurological organization are shown to be of dubious value.

The writer had read the fifteen studies before seeing the Glass and Robbins critique and reread them afterward. He finds himself in close agreement with their criticisms.

Recent research has cast doubt on the idea that crossed dominance—having the preferred eye on the opposite side from the preferred hand—has any relation to success in reading, although Delacato considers this condition sufficient evidence of neurological immaturity. In the writer's own research (*21*), crossed dominance was not significantly more frequent in severe reading disabilities than in an unselected school population, while mixed-handedness and directional confusion were found in a substantially higher proportion of reading disabilities. A study by Stephen, Cunningham, and Stigler (*43*) recently found no relationship between crossed dominance and reading readiness in kindergarten children.

Independent studies bearing on the Delacato approach have not produced supporting evidence. Yarborough (*46*) studied the value of the Leavell Language-Development Service, a procedure for strengthening the use of the eye on the same side as the preferred hand. Using a stereoscopic technique similar to one used by Delacato, she found no evidence of significant benefit in reading. Robbins (*35, 36*) tried out Delacato procedures with second graders. Not only did he find no benefit in reading but, after the training to establish consistent sidedness, there were two more children with crossed dominance than before the training.

Anderson (*1*) tried cross-pattern creeping and walking exercises with kindergarten children and found no significant improvement in readiness in the experimental as compared with a control group. He did a similar study with intermediate grade students and again found no significant differences for the total population, for lower I.Q. children, or for those with lower initial reading ability.

It may turn out eventually that the Delacato approach is useful for a small percentage of children with severe reading disabilities. However, the research efforts to date have failed to provide evidence of its value. In view of the widespread publicity given to these procedures and the considerable number of children who at present are spending a substantial part of their school time creeping and crawling, definitive impartial research on the Delacato system is urgently needed.

A rather extreme version of a point of view resembling that of Delacato is expounded by a private organization in Chicago called The Reading Research Foundation (*33*). In a brochure explaining its program the following statements are made:

> Development of the capacity to sustain concentration is influenced by continuous changes in the stimulus cues for the appropriate response-pattern and for signaling success and error of response. Furthermore, the intensity of the signals (loud hollers, for example) are used as one way of developing the stability of concentration. Cross-lateral patterns of movements are used extensively in order to promote neurological organization in each of the cerebral hemispheres as well as an integration in their functioning.

The writer has received from this organization two mimeographed papers reporting small-scale tryouts of their procedures with first grade children. Although differences between the final reading scores of total experimental and control groups were not significant in both studies, the authors argue for significance in one case by restricting the comparison to low groups of twelve children each and in the other by disregarding a nonsignificant analysis of variance and stressing a comparison of gain scores, which is, in the writers opinion, a dubious statistical procedure (*27, 28*).

A very recent feature article in the *Chicago Daily News* describes this program and reports comments by two visitors. The following is a direct quotation from the article: "Dr. E. R. Simmons, director of the Texas Reading Institute, San Antonio, visited the school and saw teachers shake, pinch, and pull the hair of students. He described his attitude as disbelief giving way to anger and distress. . . . James Weddell, director of Purdue University's Achievement Center for Children said some of his staff was 'appalled' by the approach, fearing it may 'tear some kids asunder emotionally." It is not necessary for me to add to these comments.

Kephart: motor and perceptual training

Kephart (*23*) has advocated programs for slow or disabled learners in which much emphasis is placed on developing readiness. In a recent paper coauthored with Dunning occurs the following: "Readiness for learning . . . consists of a hierarchical build-up of generalizations which allows the child to deal more effectively with his environment. Learning difficulties may be viewed in terms of difficulties in this developmental sequence. When such difficulties occur, then there are gaps in the sequence which will affect all future learning either by limiting or distorting it" (*11*). In the Kephart approach emphasis is placed on helping children change from stereotyped, rigid movement patterns to variable, adaptive, and purposeful movement patterns. Specific graded sequences of exercises are suggested to develop balance and locomotion and to improve laterality, directionality, ocular pursuit, and temporal rhythm and succession. Essentially the same basic program seems to be recommended for mentally retarded, brain-injured, and reading-disability children.

There is as yet little published research on the effectiveness of the Kephart approach in improving reading. Rutherford (*38*) studied the effect of Kephart-type activities on the Metropolitan Readiness Test scores of kindergarten children. He found a significant gain for the boys in the experimental group but not for the girls. Whether this program would induce better reading later on is not known. Roach (*34*) used perceptual-motor training of the Kephart type with groups of reading-disability children averaging twelve years old and found no significant differences in oral reading. LaPray and Ross (*26*), selecting first graders who were low in both reading and visual perception, compared a group given training in large-muscle activities and visual training with one given extra time with simple reading materials; the former group improved more on perceptual tests and the latter, on reading tests. The writer has not yet found any controlled research that shows the Kephart approach to be useful in the treatment of reading disabilities.

Points of view quite similar to those of Kephart have been expressed by Barsch (*3*), Getman (*17*), and Bateman (*4*). The writer has not been able to find controlled research relevant to their theoretical positions.

Since establishment of directionality is one of the objectives of Kephart, it may be appropriate at this point to mention a new method of preventing and correcting reversal tendencies. Daniels (*7*) has described a simple procedure which he says requires only one 20-minute session and is effective two years later. He uses paired cutout forms which are mirror images, such as locomotives facing right and left. The child is shown a pair and then practices fitting each part into the correct formboard depression; this procedure is then practiced with many similar pairs. Daniels states that one lesson at about the age of four prevented reversals at the age of six. Certainly this procedure deserves to be tested by others; if it should be found to work, one of the big problems in reading could be eliminated for most children.

Specific perceptual training

Emphasis on developing specific perceptual skills received major impetus with the publication of the Illinois Test of Psycholinguistic Abilities (*24*) and the Marianne Frostig Developmental Tests of Visual Perception (*16*). With analytical tests available, training programs were developed to improve the particular functional weaknesses disclosed by the tests. Although this approach seems reasonable and in accord with common sense, both the diagnostic validity of the tests and the value of spending time on perceptual training instead of remedial reading are at present questionable.

Olson (*31, 32*), studied the predictive value of the Frostig test and found that it had some predictive value when correlated with reading scores in grades two and three, but neither the total score nor the individual part scores were substantial predictors of specific difficulties in reading. Rosen (*37*) compared twelve experimental classes which received a half hour of Frostig training per day with thirteen classes receiving reading instruction only. The differences on reading tests consistently favored the control group but were not significant when adjustments were made to equate the groups for readiness.

According to Weener, Barritt, and Semmel (*45*), the Illinois Test of Psycholinguistic Abilities falls short of the statistical requirements for a satisfactory diagnostic test. They found that the reliabilities of I.T.P.A. subtests are too low, both split-half and test-retest, for adequate prediction and diagnosis from individual profiles.

Thus both of these tests, which have been widely adopted in reading clinics and by school psychologists, are imperfect instruments. A remedial program based on their high and low subtest scores may or may not fit the child's needs. It is to be hoped that revised versions or new perceptual tests will provide more accurate diagnostic analyses of perceptual and linguistic skills, information which will in turn permit research to determine whether remedial programs based on such tests will be valuable.

It should be noted that Frostig's descriptions (*15*) of her own remedial approach are broader and more flexible than study of her perceptual training materials might lead one to expect. She states that she includes physiotherapy, physical education, eye exercises, and help with fine motor coordination when indicated in an individual diagnosis (*14*) and employs varied teaching procedures for reading, including picture cues, phonics, and kinesthetic procedures when indicated (*13*).

Concentrated training in auditory perception as a preparation for remedial reading is advocated by Daniels (*7*), who reported that a group of retarded readers given one term of auditory training followed by two terms of phonics-oriented remedial reading improved more than a matched group given three terms of remedial reading. Since the control groups final average-age score was only 6.3, the quality of its remedial instruction would not seem to have been very high.

Silver, Hagin, and Hersh (*40*) have issued a progress report on what seems to be a quite important study. One group of disabled readers was given training in auditory and visual perception for half a year, followed by remedial reading during the second half year; the other group had remedial reading for the first half and perceptual training during the second half. However, the remedial teaching consisted of using a basal reader and following the teacher's manual—hardly an optimal remedial procedure. The authors concluded: "The results so far suggest that where perceptual defects are first trained out, reading instruction at intermodal and verbal levels will have a better chance of success. This is particularly true of the more severe language disabilities, those with defects in multiple modalities, and those in whom 'soft' neurological signs may be found." The final report of the study is not yet available.

A quite sophisticated study of the value of training in auditory perception was conducted by Feldmann and Deutsch (*12*) with third grade Negro and Purto Rican children in New York City; all of the children were initially reading below middle second grade. The experimental children were instructed in small groups of two to four, three times a week for five months. In the first study there were three experimental groups: remedial reading only, auditory training only, and separate periods of reading and auditory training. None of the experimental groups did significantly better than the others or better than the control group that received only regular classroom reading instruction. On the assumption that the instruction program needed improvement, a second study was conducted with new but similar children. Changes were made in the auditory training program, and a new variable integrating auditory training with remedial reading was added. Again the results showed the control group doing as well as the experimental groups and no significant differences among the experimental groups.

The results of the Feldmann and Deutsch study demonstrate that one cannot assume that training in auditory perception will necessarily benefit retarded readers; transfer of what is learned during perceptual training to the act of reading is not automatic and sometimes does not take place.

Drug treatment for reading disability

The most ambitious effort to provide a theoretical and experimental basis for a drug treatment approach as an adjunct to remedial teaching is that of Smith and Carrigan (*41*). Starting with the hypothesis that reading disability is based on a physiological difficulty in the transmission of nerve impulses in the brain, they developed theoretical models for five syndromes, based on various patterns of excess or deficiency in two chemicals, cholinesterase and acetylcholine. They then analyzed the results of a test battery given to 40 cases of reading disability and reported that most of the cases fell into groups that corresponded to the models. Some of the children were given drugs chosen on the basis of the kind of change assumed to be needed in the child's brain chemistry. Statistically better response to remedial reading was reported for those taking medication as compared to other children not receiving medication. In 1961 the writer (*19*), prepared an evaluation of this study which may be briefly summarized as follows: the theoretical base is highly original, most interesting, and still possibly correct; the experimental evidence is unconvincing because of technical errors in design and execution.

It is a pity that nobody has attempted to replicate the Smith-Carrigan study.

Staiger (*42*) studied the effects of a drug called Deanol on perception and reading improvement. He found a gain in perceptual speed for those taking the medication, but not in reading.

Baldwin and Kenny (*2*) tried twenty medications, singly and in combination, with 100 children having behavior disorders involving hyperactivity, impulsiveness, etc. The most effective treatment in reducing symptoms was a combination of Benadryl and Dilantin which produced some improvement in two-thirds of the cases to whom it was given, while only one child got worse. For children who are very hard to teach because of behavior disorders, the use of drugs to make them amenable to instruction seems quite plausible.

However, one should not confuse expectations with results. Valusek (*44*) did a carefully controlled study on the use of drugs with retarded readers in a state mental hospital using Thorazine, Cytomel, and Dexedrine, tranquilizers that are quite popular in psychiatric practice. He found no significant differences between the medication and placebo groups in oral or silent reading or on psychological tests.

An interesting report of successful drug treatment for a specific subgroup of disabled readers comes from Calvert and Cromes (*5*). In the eye-movement photographs of children who were not responding to remedial tutoring they found evidence of fine tremors or spasms occurring at intervals of about 18 seconds. Treatment of a few of these children with Primidone both stopped the tremors permanently and was followed by improved learning. The writer has not found any other study reporting either similar tremors or the use of Primidone, so this study certainly seems worth replicating.

These are the only studies the writer has found on the use of drugs with children having reading disabilities, studies which are certainly not definitive. It would seem logical that when children with reading disability are hyperactive or sluggish or depressed, appropriate drug therapy should be a useful adjunct to remedial teaching. New discoveries with animals open up possibilities of improving human mental functioning chemically, but as yet this area is something for the future. Certainly any use of medication should be prescribed and supervised by a physician, and we need much more research on the use of drugs with poor readers.

Summary and conclusions

This paper has considered four main approaches to the treatment of reading disability by procedures other than teaching reading skills. All are interesting, but none has yet been firmly substantiated.

Most radically innovative is the Delacato's stress on neurological organization and laterality. Both Delacato's basic theories and the practical value of his procedures for treating reading disabilities are very much open to question. Publicity has far outstripped proof. Hopefully, careful objective studies will be done to discover if the method really helps any children with reading problems and, if so, how to identify the cases to which the method may be applicable. Adoption of cross-pattern creeping and attempts to alter patterns of lateral dominance are not justified for either schools or reading clinics on the basis of present evidence.

The Kephart approach, stressing the improvement of motor control and flexibility, the development of hand and eye coordination, and directionality, has not yet found verification as an improvement in remedial reading programs. However, it would seem to have some intrinsic value apart from reading. Better control of one's body can be a desirable goal in itself. Perhaps this kind of training will find a home in the physical education program rather than be judged in terms of whether it makes a direct contribution to academic learning.

Since there is ample evidence that visual and auditory perception are both significantly correlated with success in beginning reading, the main question would seem to be how to give perceptual training rather than whether to give it. Can it be most effective when it proceeds or parallels reading instruction or when it is an integral part of reading instruction and emphasizes alphabetic shapes and the sounds of words and word parts? Here the evidence is somewhat conflicting. In the absence of proof to the contrary, the writer's preference is to combine perceptual training as closely as possible with reading instruction.

The fourth and final special approach considered here, the use of drug medication, is one in which future possibilities far outstrip the present inconclusive findings. If the particular drugs tried so far have not produced remedial reading miracles, perhaps some drug not yet discovered will do so. We must keep a close watch on the possible contributions of pharmacology to remedial education, and we should encourage continuing research in this area.

This paper began by pointing out the contrast between the classical emphasis on making use of the child's best avenues for learning and some newer approaches which concentrate on building up deficiency areas. As yet, the newer approaches have not provided convincing proof of their effectiveness. Those who have been obtaining satisfactory results with established methods of remedial teaching would do well to wait for more conclusive evidence before adopting any of the newer procedures that have been discussed here.

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Pro-Challenger: JANET E. LIEBERMAN
Hunter College

TWO OF THE FOUR THEORIES discussed by Harris have particular relevance for reading specialists. Specific perceptual training and motor perceptual training are applicable in the classroom setting. The writer will review some of the evidence supporting these remedial techniques and indicate some extensions and applications which are being developed. The market is being deluged with materials advocating a variety of exercises for remediation, and programs are being offered with emphasis on visual and auditory perception as prerequisite skill training. What positive research evidence exists to support this trend?

The area of specific perception

With regard to the area of specific perception, Taft and Cohen (*20*) have said, "The act of reading involves the use of many sensory mechanisms. Visual reading requires intact visual apparatus, normal visual and perceptual capacities, integration of visual and auditory stimuli, auditory discriminative abilities, and probably many other factors which at present are unknown." The existence of a relationship between perceptual abilities and reading has been amply documented in the studies of de Hirsch, Jansky, and Langford (*5*); in the comparison studies of good and poor readers of Budoff and Quinlan (*4*); and in the extensive reports of Silver, Hagin, and Hersh (*18*). Lubkin (*12*) states, "There is an excellent correlation between poor perception and classroom adjustment in kindergarten and first grade." Birch's work (*2*) indicates that older children who are disabled readers have difficulty in intersensory integration and that the maturation of their visual auditory integrative abilities was delayed. de Hirsch (*6*) finds "deficits in auditory verbal organization . . . are frequent in poor readers."

Now, what about the effects of correcting these deficiencies in retarded readers? Chansky is able to find permanent change following perceptual training with different groups (*19*). Maslow (*13*) administered the Frostig test to 25 kindergarten children and then exposed them to reading materials. Eight with visual perceptual quotients below 90 could not learn to read, while only one with a score above 90 had difficulty. A pilot training program was reported to be successful in increasing scores on the test. Spache (*17*) reported that training in visual perception for two months resulted in as much growth in perception as had occurred in two or three times that period in regular reading instruction. Murphy (*14*) reports that growth in sight vocabulary in beginning reading is related to perception of word elements. Budoff and Quinlan (*4*) studied the differences in rate of learning among average and retarded readers when the mode of perceptual input was controlled. Their conclusion was that the superiority of the aural modality was "maintained by all subjects but that the retarded readers were better auders and poorer visual learners than the average readers."

These authors go on to state, "The superiority of aural learning has support from studies done with a variety of tasks in which the findings rather consistently indicated that auditory presentations with meaningful materials result in more rapid rate of learning with primary grade children, poor readers or lower ability children." The work of Russell, Young, and Lass suggests that "at later ages or with difficult material, the visual presentations seem to result in better retention and learning or no difference" (*4*).

There is considerable evidence to show that perceptual training has some effect on reading. When we examine this evidence in more detail, we find ourselves asking further questions: For what age group? For what level of reading? For what skill deficiency? For what socioeconomic group? Even, for what teacher?

Perceptual motor training

Some of the same difficulties exist when we examine the evidence in support of the perceptual motor approach, based on Kephart's work.

Rutherford's study (*16*) indicated that a program based on perceptual-motor skill training had a significant effect on reading but not on number readiness. Roach (*15*) found that Kephart's training procedure improved reading achievement with retarded readers. Silver and Hagin (*19*) indicate that "Neurologically, the ability to distinguish between right and left is improved but problems in the establishment of clear cut cerebral dominance persist." . . . in the area of visuo-motor functioning, there is maturation . . . but evidences of defects still remain."

New work with perceptual motor tests

Elkind (*8*) studied another type of perceptual problem in the relationship of figure to ground. He found that slow readers "were less adept at figure decentration . . . They required more direct clues during training and transferred the effects of training to a significantly lesser degree than the average readers."

The Minnesota Perceptuo Diagnostic Test is a new instrument which tests visuo-motor abilities in retarded readers. On the basis of rotation of figures, causality of reading problems is classified as organic, primary, or secondary, according to the criteria originally defined by Rabinovitch. Krippner (*11*) used this test and found classifications based on the M. P. D. coincided in 22 out of 24 cases with similar classifications made by graduate clinicians. Kreitman (*10*) stated that the M. P. D. correctly identified 82 percent of his group of elementary school children. This identification was based on the consistency of agreement with school behavior, social history, and medical tests. All of the children with organic defects were correctly identified. Similarly, Fuller (*9*), using this instrument, correctly diagnosed 89 percent of a group of 187 retarded readers as compared to 100 normal readers.

More recent approaches

The more recent work of Ayres (*1*) in the field of perception introduces a factor-analysis approach to the understanding of perceptual motor dysfunction. Thirty-five perceptual motor tests were administered individually to 100 children. The analysis of the patterns revealed six differentiating factors: developmental apraxia, representing measures of motor planning and eye-hand accuracy; perceptual dysfunction, representing tests of form constancy and space relations; tactile defensiveness, representing hyperactive behavior; deficit of integration of the two sides of the body, representing an inability to discriminate between right and left; and perceptual dysfunction, represented by tests to identify figure-ground discrimination.

Ayres' study highlighted the components of behavior and emphasized an additional dimension in understanding perceptual motor skills. The more recent research of Birch and Belmont (*2*), utilizing the findings of the research in specific perception and in motor and perceptual training, introduces a third concept —the importance of intermodal transfer. Following this lead, Blank and Bridger (*3*) studied the conversion of visual-temporal to visual-spatial patterns and found that retarded readers were inferior to normal readers in integrating the sensory information. The deficit seemed to be due to "the difficulty retarded readers had in applying conceptual categories or the correct verbal labels to temporally presented stimuli." These investigators relate this deficiency to the phenomena cited by Piaget concerning the development of classification and suggest that a deficit of conceptualization may be present.

Application in the classroom

It is the combined emphasis on intersensory integration and concept formation which provides the background for some of the writer's personal investigations. His experience in teaching retarded readers in the disadvantaged and advantaged population supports the integrated approach. In a population of children with perceptual deficiencies, we developed a program of remediation which emphasizes vocabulary concepts and concept formation. We found that some of the children who were nonreaders at the outset were able to make eighteen months' progress in six months. We integrated the teaching of the vocabulary concept with a classic lesson and increased the experience in sensory integration. The concept was presented in a concrete manner, utilizing as many sensory channels as possible, visual, auditory, and tactile. Experience in developing the concept stressed the cross-modal transfer; application and evaluation again involved intersensory expression. The verbal labelling skill which resulted from this training transferred to many beginning skills in reading.

This plan is consistent with our previous work with a fifth grade population in an advantaged school. There we found that classroom instruction in vocabulary concepts resulted in improved reading achievement scores and a higher level of conceptualization.

Understanding the importance of multi-sensory stimulation and cross-modal transfer has opened up new approaches in remedial teaching and has led to the development of ideas which are directly applicable to work in the classroom. The most rewarding aspect has been the development of materials and methodology using music, art, and photography to teach remedial reading. Stimulation includes auditory and visual channels with either music or photography. Lyrics are used as text, and comprehension skills are developed with nonliterate material. Analogous skills in reading, music, and art have been developed; and the children move from one mode of expression to another, transferring the skills easily. Motivation is achieved by immediate success and direct functional application of the skill taught.

In summary, there is adequate literature to support the importance of specific perceptual training and motor perceptual training in the theoretical framework of remedial reading. Both of these concepts underlie the more recent work which now shifts the emphasis to the importance of cross-modal transfer. In the writer's own experience, these newer concepts have been helpful in explaining the problems of the retarded reader and in translating these explanations into remedial classroom practices.

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Con-Challenger: **JAMES JAN-TAUSCH**

New Jersey State Department of Education

INSIGHT relative to the value of the special theories of teaching remedial reading might be achieved by consideration of the needs that have prompted the development and advocation of such solutions. It is the writer's belief that special theories have been put forth for two reasons. One of these reasons is that common theories and practices have failed to make good readers out of all the children entrusted to the schools. Teaching children to read effectively has become a major criterion for evaluating the schools of today. This demand that we make good readers of these youngsters occurs at a period of time when medical advances are enabling us to keep alive, at various levels of intellectual functioning, handicapped children who previously would have died at a very early age or who, if they had survived, would have been confined to residential custodial care. By law, we are now mandated to take *all* children at the ages of five or six into our schools and to provide an educational program for them until they are 16 or in some states such as New Jersey, 20 years of age.

The second reason special theories have been developed is that professionals other than teachers have entered the educational field and have proposed remedies which are directly related to their own area of specialization. Physicians (psychiatrists and neurologists), psychologists, optometrists, and chemists are telling the teachers how to teach reading. The authority invested in their professional status causes many of us to listen.

These professional noneducators have so far developed theories and, in some cases, materials which have been generally concerned with 1) getting children neurologically "ready" to learn to read, 2) reorganizing the neurological experiences so as to build up a "necessary" sequential pattern, and 3) providing a parallel motor experience which will carry a transfer-of-learning effect.

Harris has given us an expert overview of a selected group of these new theories of teaching remedial reading cases, and at the same time he has reported some of the pertinent research applicable to each one. In every case the research he reviewed was either unsupportive of the theory involved or was inadequate in itself.

Harris was, however, kind enough to say that most of these theories are interesting and that they should be further explored and scientifically researched.

The writer has no intention of expanding on the research findings reported by Harris. As a matter of personal opinion, the writer thinks that statistical significance comprises only part of the story. He would instead like to look at the situation as a reading teacher might see it. Teaching children to read is the art and science of such a teacher, and it is he who should evaluate the new theories in terms of what *he* knows and what he has learned from his experiences. And the teacher does know what *reading* is.

The teacher is aware that what we call reading is a process comprising several steps. He knows that the first step in the reading process requires that the individual recognize that thoughts can be expressed in speech sounds. Any child who can follow verbal directions gives evidence of awareness that ideas can be translated into speech sounds.

The teacher knows that the second step in the reading process involves the individual recognition of the fact that speech sounds can be expressed in visual letter symbols. Any child who can identify his name in print and tell whether it is spelled incorrectly gives evidence of being consciously aware of this concept.

The teacher knows that the third step in the reading process needs the bringing of meaning to visual letter symbols and that any child who can correctly respond to such signs as STOP and GO gives evidence of being able to do this step.

The teacher knows that the fourth and final step in the reading process involves the *getting* of meaning from visual word combinations. Any child who can select the contextually appropriate meaning of a word, which has more than one possible interpretation, gives evidence of possessing this ability.

Once beyond this fourth step, when we assess the child's *reading,* we are not deciding whether the child has the potential readiness to read or *if* he can read but, rather, we are evaluating how *well* he reads—a different story entirely. How *well* a child can or does read depends on how well he can *think.* How well he can think depends on his experiential background, his native intelligence, and the quality of the opportunities afforded for him to do some thinking on his own.

The writer believes that we must evaluate new special theories of teaching the remedial reader from the perspective of these four steps of the process involved and the level and kind of thinking possible for him. The writer further is of the opinion that we must establish a clear definition of what we mean by a true *nonreader;* and the definition offered for the nonreader is "a pupil who cannot apply the appropriate sound and meaning to even a few words when they are visually presented."

When we look at such nonreaders and consider using these special new theories that Harris has discussed, we must not include those children whom we know possess a serious sensory disorder such as visual or auditory malfunction. Similarly we should not employ these new theories for those children whom we know have an emotional trauma which blocks abstract thinking and interferes with academic learning. Finally we should not consider using these particular theories with those children whom we know have experienced a poverty of experience, for these youngsters who live under low socioeconomic conditions are very limited in the language development that they bring to the learning-to-read-process.

The possible causes of difficulty in learning to read, exclusive of major sensory defect, emotional trauma, and environmental handicap, are still manifold; but the number of children affected by such other causes is very *few*. That one of these other causes may be significantly related to the perceptual, neurological, chemical, and motor activities prescribed in the new theories reviewed by Harris can very well be true. No clinician should be discouraged from seeking answers to perplexing questions about a particular child's disability in learning to read. What is necessary, however, is that we do not blindly accept the theories of those who are authorities by virtue of another profession, abandoning as of little value what we have learned as educators about the methods and materials that have proved effective. Great pressures are being exerted upon our schools to do what all the other social institutions have failed to do. It is important that we do not, under these demands, turn to new theories chiefly because they may enhance our self-image and reputation among our colleagues or because we are under compulsion to produce quick and dramatic results.

THE TEACHING OF READING in high school is a fairly new concept, whose newness may be one reason why it is beset with so many problems. Chief among these problems are those that have to do with method, skill development, and content. Since reading has been taught in elementary grades for so many years, these problems are not so troublesome at that level. Should we provide a "stepped up" elementary program for secondary students? Or should we break from elementary procedures and teach new skills with new types of content? The papers that follow thoroughly review this situation and offer many worthwhile suggestions for those who are especially interested in the teaching of reading at the secondary level.

Are There Any Real Differences Between Reading Instruction in the Elementary School and in the High School?

A. STERL ARTLEY
University of Missouri at Columbia

IN REGARD to the question "Are there any real differences between reading instruction in the elementary school and in the high school?" the writer had never thought of this as being an issue. That there are differences between the instructional programs on the elementary and secondary levels is widely recognized and accepted. In fact, this condition is inherent in the way the question is stated. The entrance of the controversy comes with the word "real"—are the differences between the elementary and the secondary programs real, real being interpreted as a condition of sufficient worth to modify in a significant degree the goals of instruction, the nature of the content, and the instructional procedures. The writer will discuss the programs on the two levels along with factors that differentiate them. It will be up to the pro and con speakers to determine whether these differences are *real.*

Several factors condition the nature of an educational program in any skill area, be it mathematics, spelling, or reading. One is the developmental status of the learner; another is the demands of the curriculum areas where the skills will be used, and the third is the structure of the material to be learned. No one of these three factors alone is sufficient to determine what and how instruction should be given, for each operates in conjunction with the other two.

Developmental status of the learner

Let us consider first the factor of developmental status of the learner on the two levels under consideration. It is an established axiom that what is taught should be related to the learner's growth or developmental status. One would hardly expect an entering first grader to sift out the relationships among ideas in a piece of expository writing and indicate them on a three-level outline. Neither would we expect a tenth grader to be challenged by the play antics of a neighborhood group of children in a story told with the vocabulary of the first three hundred words on the Thorndike-Lorge word list.

Children of elementary-school age enjoy a vigorous, healthy life, with girls being about a year more mature than boys of the same age. Intellectual maturation proceeds rapidly, and longer periods of sustained effort and self-direction are possible. Vocabulary increases rapidly, as does depth of comprehension and analysis. Interests expand and become specialized and differentiated. Increased mental maturity enables the nine- to eleven-year-old to see idea relationships, generalize, and form conclusions. Socially, a cleavage between the sexes begins to put in its appearance with differences in interests between the two groups becoming apparent. Both boys and girls prefer group participation to individual, and the influence of the group or gang becomes more important than that of the home or school.

Developmentally, the twelve- to seventeen-year-olds are in a period marked by many changes in all areas as they approach maturity. Anatomical and physiological changes accompanying puberty have a direct bearing on interests and attitudes. Mental development continues with increased ability to think on increasingly higher levels, see difficult relationships, and make more penetrating types of analyses. Paralleling the growth toward mental maturity is the increase in the background of experiences which affords the criteria against which to make judgments and comparisons. Group influences continue and become more potent during this period as they influence behavior, dress, standards, and interests. Sex differences in interests and activities are particularly noticeable during the junior high period but become less striking toward the end of the high school period as youths begin to approach maturity. Increased social participation, interests in spectator sports, and school and work activities reduce the amount of time available for at-home activities which find favor with their younger brothers and sisters.

Curricular demands

Not only does the nature of the learner affect the nature of the reading program in different ways at the intermediate and secondary levels but so do the demands of the various curricular areas. In one respect, one must look at the reading program as a service area. At each of the several rounds on the educational ladder, it must meet the reading needs placed upon it by the several curricular areas; and those needs are different, at least in degree if not in kind, at the two levels we are discussing.

At the intermediate level, one finds the school program characterized by well-defined subject areas. Each requires a group of concepts and related vocabulary that needs to be developed. Study becomes an important activity and makes demands for a new set of competencies. Libraries are used as a source of information. Content in the various subject areas becomes increasingly difficult in terms of concept level, vocabulary, and sentence length and complexity and makes increased demands on the learner for greater facility and precision in word perception and comprehension.

At the secondary level, all that has been said of the elementary level could be repeated, but the advanced nature of the various curricular areas make even greater reading demands. Reading becomes more highly specialized as the learner (now a student rather than a pupil) moves into the more specialized types of subject matter. In literature, for example, the student is concerned not only with such elements as plot and characterization in a narrative selection but with the author's style and his method of accomplishing the desired mood or effect. In social studies, the student must become aware of propaganda devices and their subtle and, at times, insidious influences on ideas and attitudes. Because of the differentiated reading demands placed upon the high school student, he must learn how to adjust his reading to the requirements of the task in terms of rate, purpose, and outcomes. The student must become adept and independent in all aspects of the study act—setting, purposes, locating information, selecting and evaluating the ideas, and organizing them in the light of the study objective. Because of these curricular demands, the reading program is correspondingly affected in the way of objectives, materials, and methods.

Structure of the reading process

Reading is a complex activity. Those of us who research it, teach it, and direct it and the children who learn it recognize the truth of this statement, in spite of the fact that some would attempt to oversimplify the act by emphasizing only one of its main aspects. The yearbook committee preparing the section on the "Nature and Development of Reading" for the *Forty-Seventh Yearbook, Part II* of the National Society for the Study of Education stressed the developing complexity of the reading process. The committee (*7*) writes:

> Obviously, the concept of reading which we are now considering is a very broad one. . . . It is no longer conceived . . . as a unique mental process nor as a single activity involving many mental processes. It is rather a series of complex activities, the nature of which varies with the ends or values to be attained.

The committee then proceeded to break down the broad concept of reading into related understandings, attitudes, and skills. Three main divisions resulted, each having detailed subdivisions: 1) understandings, attitudes, and skills in interpreting written and printed material; 2) adjustments in reading needed to achieve purposes dictated by the reader's interests and needs; and 3) information and techniques essential in locating, selecting, and using reading materials from various sources.

The committee then proceeded to show that progress in the growth of reading ability is continuous from the primary level through college, but at rates which vary from individual to individual. Moreover, it said, ". . . whereas practically all major reading attitudes and skills function from the beginning, they mature at different times." Growth in the elementary grades is more pronounced in the basic aspects of reading, whereas on the secondary level it is concerned with the more mature types of interpretation, critical reaction, and integration.

Reading growth is a part of the total language development of the individual and involves a series of sequential learnings of gradients from the prereading level through the adult years. Unfortunately, it is only on the early levels of language development that we have research evidence indicating the specific growth sequence. Though a sequence exists on the elementary and secondary levels, it is usually empirically derived by curriculum designers and authors of reading programs. Hence, though the sequence may vary from one program to another, it is present nonetheless.

It is striking to note that the great majority of skills, abilities, and understandings that one finds employed on the secondary and advanced levels have their roots, their readiness at least, on the primary level. The program on the advanced levels is designed to increase ability, develop precision, broaden interests, and promote independence and self-direction. Hence, the major differences from one level to another may be those of degree rather than type, though, as we have pointed out, maturity in certain skill areas may be attained at different times.

Implications

It would be rather difficult to look at the reading program on any level and conclude that what is taught and the methods and materials used are the result of any one of the single factors discussed. Instead, what we see is the result of a combination of the influences of developmental status of the learner, demands of the curriculum, and the structure of the reading process.

Though the foundations of the basic skills of reading have been laid down on the primary level, grades four through six are needed to extend and develop these competencies to the place where the young reader may perceive words with increased facility, use the dictionary with dispatch, comprehend stated and implied meanings in narrative and expository materials with increased precision, and be able to show evidence of the ability to think critically about the ideas expressed.

Since study is beginning to be an important activity in grades four through six, it would be on this level that the pupil takes initial steps in this activity and will discover what makes it different from reading done for enjoyment. And since study is an activity with specialized content—history, science, mathematics, and so on—the learner needs to acquire the vocabulary and to learn to utilize reading abilities unique to each of the study areas. His study will require the use of source material; he will need to learn how to use the library. He will need to begin the process of adjusting his reading rate and procedure to the variety of purposes for which he is called upon to read.

During these years the teacher has a golden opportunity to establish habits of personal reading by capitalizing on the variety of interests that pupils show. The teacher must never lose sight of the fact that the personal and social development that take place through reading is only the payoff for the growth that takes place in reading as a process.

Of course, what is taught on this level, as well as on prior and succeeding levels, must be in terms of the level of development of the learner. Consequently, those pupils who have been traveling along the developmental spiral at a slower rate may need sequential instruction on several levels behind others who are moving at average rates. By the same token, those who are traveling at accelerated rates should be challenged by instruction on a more advanced level lest they die on the vine of boredom.

Any curricular guide establishing guidelines in reading for the elementary level will certainly make provision for special programs or services for those pupils in need of corrective and remedial help. On this level, if not before, those children who for one reason or another are falling below their potential for achievement must be identified and provided special help. Waiting until later only creates a more severe problem, usually with concomitant side effects.

All that we have said with respect to the reading objectives for the intermediate level could be repeated for the secondary. Bond and Kegler (*1*) indicate the primary goal of the high school program as that of maintaining a balance between growth in essential reading skills and abilities, expanding interests and improving tastes, increasing fluency, and adjusting the reading act to the demands of the various content fields.

From the thinking expressed by Bond and Kegler and others we might assume that the secondary program is only more of the same thing. True, one would likely find few distinctly new reading abilities being initiated and developed on the secondary level. Here the task is one of applying to material of increased difficulty the same skills and understandings that the reader has used on lower levels, but with still greater proficiency and depth of penetration in keeping with the reader's increased maturity, perceptiveness, insight, and experiential background.

This is precisely the point of view taken in program organization in the other language areas. In writing, for example, there are no skills of paragraph organization that are unique to the tenth grade. One is still concerned with topic sentences, sentence organization, connectives, unity, and coherence, all elements that we were concerned with in the elementary grades. But no one assumes that writing and speaking activities can be terminated on entrance into junior high school, for from here on these competencies must be refined, perfected, and made automatic.

Although there is no new instructional area on the secondary level, *study* demands special attention. Study is now serious business, and during the six years or so of junior and senior high school, with possibly four years of college, it will be the student's primary concern. Competence in this activity cannot be developed through osmosis, nor can it be turned over to the fifth and sixth grade teachers alone. If study were the sole instructional job in the reading area in high school, we could still justify teaching time to do it adequately.

Instructional materials on both the elementary and secondary levels are varied. On the elementary level, teachers make extensive use of basal readers and accompanying materials around which to promote continuous and sequential development in the essential reading competencies. A nationwide survey made by the Bureau of Applied Social Research (*2*) at Columbia University showed that 91 percent of the teachers in grades four through six used basic readers from one or more series on from half to all or most days. Several basal programs have extended materials for use in the seventh and eighth grades. From the ninth through the twelfth grades, the literature program may provide the avenue for continued reading growth. In addition, on both levels there are available special skill development materials that may be used for either developmental or corrective reading.

On both levels, elementary as well as secondary, one cannot overemphasize the place and importance of a well-equipped and staffed library having materials covering a full range of interests on various levels of difficulty. Though central libraries are quite universally found in secondary schools, such is not yet the case in elementary schools. Consequently, it becomes difficult to talk about the development of reading interests and tastes and the use of resource materials in study where the materials necessary for such use are not available in the first place.

One wishes that he might find more frequently on the secondary level materials for the various instructional units in the content areas on levels easier and more difficult than those commonly used for that given grade. Materials of this type are a must if the high school teacher is to build his program on what we know of the way young people grow—some slower, others much faster than the average for the grade. The lack of agreement between the elementary and secondary school is particularly noticeable on this point, for the elementary teacher, teaching in terms of the child, will send young people into junior high school reading on levels below (and above) grade seven. But frequently the seventh or ninth grade teacher, concerned chiefly with his subject, expects all to conform to the middle of the distribution. Here is the beginning of the dropout attitude on the part of many students.

On both levels, the methods and procedures employed to care for individual differences in achievement levels and learning rates are varied. If one were to make a survey of the organizational plan used most frequently by elementary teachers, he would undoubtedly find that some arrangement for grouping within the heterogeneous class would be the one most commonly used. This generalization is borne out by the finding of the survey conducted by the Bureau of Applied Social Research to which we have already alluded. When teachers were asked what kind of classroom organization they would use with a group of approximately thirty-five children, eighty percent of the teachers in grade four or higher answered, "Mainly instruction in groups based on reading ability." In addition to any major type of grouping, teachers frequently meet with individuals or small groups of children in special-help groups where a need is present for additional work. At times children may work in special interest groups where they will be discussing books dealing with a subject in which all are interested. Others may be working on an investigative project in science. At still other times during the week, the whole class may be together in a book club meeting or listening to the next chapter in a new book the teacher is reading aloud. By various grouping arrangements, the teacher is accommodating the gifted as well as the average or slower learners in her class.

In addition to any type of class grouping, one frequently finds special services available for those children whose achievement has fallen behind their reading potential and are in need of special help. As we mentioned, special services of this type are imperative on this level, for one of the major objectives of the elementary level is to send pupils into junior high school reading on a level commensurate with their potential, though that potential may not permit a reading level commensurate with their grade.

The elementary teacher is in a highly desirable position insofar as reading is concerned; for since she is likely to be in a self-contained classroom or in a team-teaching situation, she, or those who are working closely with her, sees her children in many different kinds of reading situations—in the reading class itself, science, social studies, and mathematics. Knowing her children and their needs, she is able to teach reading all day long and to make needed adjustments all along the line.

On the secondary level, the organizational pattern for reading instruction is not so clearly defined. In fact, one must report that in all too many secondary schools, reading is simply not taught. Cawelti (*3*) made a study of reading programs identified in a survey of Midwest high schools. Out of 47 schools surveyed, 27 had some type of reading program; but only 12 of those were sufficiently comprehensive to be called developmental, the others being remedial. In 21 of the 27 programs, instruction was provided through regular class periods, usually English, while in the remaining six, it was given in special periods.

Smith (*6*) conducted a study of the status and character of reading programs for grades seven and eight in selected schools of Missouri. Though Smith found some type of program in 114 of the 140 schools studies, when he applied certain criteria of "comprehensiveness," the number of programs was reduced to 30. When he applied still further criteria of "soundness" to the programs, the number was further reduced to seven. In discussing reading programs, it is apparent that one needs to be cognizant of type and quality, for a "reading" program may be one little more than name. In spite of the emphasis on reading in the secondary school, the picture is far from encouraging.

Several factors militate against the organization of reading programs on the secondary level. One is the idea still in the minds of many secondary administrators that reading instruction is the responsibility of the elementary school. Unlike the need for continued growth in the other language arts areas, it is assumed that students have attained maturity in reading at the end of the sixth grade. Secondary school guidance counselors who are responsible for recommending course programs are likewise unfamiliar with reading needs of students. They fail to differentiate those who need a program adjusted to their slower learning rate from those who are in need of corrective instruction.

But one of the major deterrents to a secondary reading program is the absence of trained personnel to organize such a program or to carry one out. Studies by Geake (4), Smith (6), and Peyton and Below (5) have been reported showing that difficulties in securing trained personnel stood as a deterrent to organizing a reading program. Frequently it was given as a reason for discontinuing one that had been in existence. The simple fact is that those in the business of teacher training are not preparing teachers to assume such responsibilities. Most states now require an elementary teacher to have a course in reading methods for certification, but few have the same requirement for secondary teachers, even for those who are becoming teachers of English.

In all fairness though, the organization of the secondary school into subject areas with each area taught by a subject specialist makes it much more difficult to carry out a unified reading program than on the elementary level where a given child is usually with his teacher all day long. Knowing his reading strengths and weakness, the teacher can work with the child in many different situations. On the secondary level no one knows the student well enough nor assumes the responsibility for meeting his special reading needs, whether they call for corrective work, an adjusted program, or enrichment. To put it succinctly, there is a great deal to be done on the secondary level in the way of developing a sound and effective reading program.

In summary, the status of the learner, the demands of the curriculum, and the structure of the reading process itself are factors that determine the nature of the reading program on both the elementary and secondary levels. To what extent these factors account for "real" differences in reading instruction on these two levels is an issue that awaits the pro and con discussions to be found in the next two papers.

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Pro-Challenger: MARGARET J. EARLY

Syracuse University

OUGHT THERE TO BE real differences between the way reading is taught in elementary school and the way it is taught in high school? Artley says that differences exist and that they are widely recognized and accepted. Not to put too fine a point on this phase, the writer is willing to believe that whatever exists and is widely recognized is "real." So to keep this controversial issue from evaporating in happy accord, let us argue that the differences are not only real but they ought to be even sharper. Teaching reading in secondary school should emphasize different goals, employ different instructional arrangements and approaches, be based on different kinds of materials, and call upon different teacher competencies. The fact that there are, and should be, real differences does not, of course, deny that there are also similarities; and these likenesses may be more significant than the differences. Similarities in instruction must appear at every level in a process of skill development that is continuous and sequential. The point at issue here, however, is that the secondary school program should not be simply an extension on a mature level of patterns of instruction that have proved successful in the elementary school.

In the elementary school the goal is to produce readers. The main effort is to teach children how to decode the writing system of an alphabetic language, making sure that the process of decoding is always a search for meaning. To produce readers implies also that the goal in elementary school is to teach children *to* read, as well as how to read, and to establish the value of reading as a source of pleasure and information. In the secondary school the major effort is to take readers and turn them into studiers, or students. This change in emphasis affects program, methods, materials, and the attitudes and competencies of teachers.

Take, for example, the matter of program—the place of reading in the curriculum. There is ample justification for scheduling definite periods of time for reading instruction in the elementary school. But in secondary school the best kind of program would not show at all on the master schedule. Ideally, reading instruction should be so closely integrated with teaching subject matter that there is no discernible point at which one leaves off and the other begins. A typical reaction of subject-matter teachers to their first course in reading is, "But you're not talking about reading; you're talking about good teaching." Exactly! Reading instruction in the secondary school is teaching how to study subject matter. This discovery on the part of the secondary school staff inspires hope; reading instruction is not sounding out words, nor is it speed reading. The assumption by many high school teachers that reading is either phonics or speed has allowed them to reject their responsibilities on the ground that reading is a specialization outside their area of competence. When this assumption is corrected by asserting the real differences between instruction at the elementary and secondary levels, there is hope for a realistic plan for the high school.

In many schools the extension of reading beyond grade six has meant special reading classes which imitate the reading periods of the elementary school. Such classes usually fail to meet the needs of junior high school students because they focus on word analysis skills and basic comprehension, employing basal readers and workbooks that seldom approach the level of skill development demanded by the subject-matter textbooks with which students are struggling. The inadequacy of these classes for the great majority of the students they serve is evidence that reading instruction in secondary school ought to be different.

A clue to the differences between elementary and secondary reading lies in the studies of relationships between reading and intelligence. In primary grades typical correlations are of the order of .35; in high school they reach as high as .80. Granted that the higher correlations in high school studies are, in part, the effect of reading saturation of group intelligence tests, they also suggest that beginning reading requires lower level skills that can be learned by pupils of a wide range of intelligence. But mature reading tasks demand higher thought processes. By the time they reach secondary school, students who had been pretty good readers in elementary school begin to break down. Although they are proficient in word analysis skills, they have failed to acquire the adult vocabularies used in textbooks and source materials. Although they may have acquired a good deal of miscellaneous information in science and social studies, they have not learned how to sort out their ideas and to bring those which are relevant to bear upon new information. In a spiral curriculum, indeed in any kind of learning, it is essential to use what you know to facilitate the learning of new and related ideas. Students coming into high school have often not learned to set purposes for themselves, to select from multiple purposes, or to read a single selection for several purposes. Brought up principally on narrative materials, they have learned to begin at the beginning, reading every word, permitting the author to unfold his story at his own pace. This procedure is all very well for fiction and simple narration, but it does very little for an attack on ideas presented, as they are in most textbooks, by exposition and argument.

In high school, students must learn to vary their reading and study techniques according to the demands of subject matter. Much of the material on which they "practiced" reading skills in the elementary school presented trivial ideas; it deserved to be forgotten. But much of the material of the content fields deserves to be remembered, since it must serve as the background for new learning. So, instruction in the high school emphasizes retention as well as comprehension and develops skills of orderly intake in order to facilitate recall and orderly output. Since total recall is inefficient as well as rare, the development of retention requires skills of judgment. In high school, much more than in elementary school, comprehension involves interpretation and evaluation; simple intake, that is, knowing what the author says, is almost never enough.

This quick summary of the needs of students should suggest major differences in teaching strategies. For example, the directed reading lesson is an effective method in elementary school where basic skills are developed through insuring their effective use in a common reading task. But this method begins to lose its effectiveness as the need for independent reading and study increases. The directed reading lesson, as its name implies, is essentially a crutch, a most useful one when the purpose of reading is the acquisition of concepts which are unfamiliar, remote, and difficult. Since this is a purpose which continues through the secondary school, the need for the directed reading lesson, adapted to the maturity of the learners, continues to be strong in all subject fields. But gradually, both because the student needs independence and the high school teacher cannot direct all his reading anyway, the directed reading lesson must be transmuted into a method in which the student surveys what is to be read, examines his background in terms of this text, sets his own purposes, determines an appropriate rate of reading, practices recall of the author's ideas, and assimilates them to his own learning structure. Teaching this method takes time. It is what we mean by reading instruction in secondary school, and it goes on whenever and wherever students are expected to learn by reading.

The writer is talking as if every teacher in the secondary school is already a teacher of reading, and that of course is not true. What about those schools where reading instruction is still a narrow program centered in special or "extra" reading classes? How does instruction here differ from the elementary school's reading period? The directed reading lesson is almost never appropriate in the skills-oriented special reading class because here concept development is not the central purpose. In the skills class, the unifying principle is not subject matter but learning how to learn. The skills spectrum must encompass all reading tasks. The lesson plan is centered on skills—what the specific skill contributes to learning; how it is to be applied; and, of course, when practice with the skill is given at varying levels appropriate to different students' needs.

A somewhat different skills emphasis is needed in secondary reading classes. More attention to speed reading is desirable, with emphasis on rate of reading. Vocabulary development focuses on techniques more than it does on specific words. Familiarity with reference tools and efficiency in using them is another needed focus. Listening skills are taught as part of the repertoire for learning.

Special reading classes are most justifiable for the adolescent whose skills are still at the level of primary and middle grade readers. For these pupils, are not the goals the same as in elementary programs—to make them readers first and after that *perhaps* to make them students? Yes, the goals are the same, but the methods must be different because the children are different—more sophisticated and more confused, hardened to failure, bored with methods that have not worked before. For these youngsters a whole new approach is necessary, and it is doubtful if we have discovered the directions yet. The directed reading lesson applied to content on auto mechanics, budgets, and working in bakeries does not seem to be the answer. Programed materials offer hope. Personalized writing and reading seem to work for some teachers. Probably what these youngsters need is not methodology but therapy.

A characteristic of elementary school reading instruction which looms large in the secondary teacher's imagination is the use of three reading groups. This type of classroom organization coupled with the basal reader, spells "program" to most secondary teachers—and they recoil from it. A three-group plan is almost prohibitive when you are trapped in a fixed schedule, meeting a different class of 25 to 30 students every 42 minutes. This misconception of reading as three groups and a basal reader must be removed. Especially in a departmentalized curriculum, individualized skills practice supported by personal reading may be the easiest road away from the whole-class lockstep.

In summary, it might be said that an attempt has been made to underline some of the differences between reading instruction in elementary and secondary schools which, if not real, ought to be. Further, the implication has been made that secondary teachers must capitalize upon the differences in students' needs and the differences in school organization and teaching skills in order to create new strategies for improving reading instruction in the high school. But the closing reminder which the writer would like to leave is that the purpose of these sessions on current issues is not to accentuate differences but to reconcile them. Our greatest need is for elementary and secondary teachers to see where their goals are the same, how they can learn from one another the best ways of reaching these goals, and how they can make reading instruction from grades 1 through 12 truly continuous and developmental.

Con-Challenger: ELDONNA L. EVERTTS

University of Illinois at Urbana

WHETHER YOU REGARD the question under discussion in this chapter as an issue facing the teaching of reading at this time, no doubt you will agree that there are basic considerations suggested by this question which must be resolved. Some of these considerations include the nature of the reading task itself—that is, the process the pupil engages in when performing the act of reading; the expectation of what can be discovered through the activity of reading by a pupil in the elementary or secondary school level as he studies in the content areas or engages in personal reading; and the characteristics of the learner himself. Only after we have analyzed the common elements of reading at all levels—beginning instruction through mature enjoyment—can we contemplate any real difference of instruction which might be appropriate for the elementary and secondary student.

In his article Artley indicates that he did not previously think of the question, "Are there any real differences between reading instruction in the elementary school and in the high school?" as an issue. He further points out, and correctly so, that present instructional programs indicate that the concept of differences has been accepted. Reading is not taught the same at the elementary and the secondary school levels. The high school student is not expected to engage in activities commonly associated with younger pupils.

At the present time reading instruction at the high school level is largely the responsibility of the teacher in each content area, even though he may not recognize this responsibility as he works within his discipline. For example, the secondary school teacher of English may not readily realize that the common practice of close reading of literature is similar to the teaching of reading or that the analysis of poetry and its omission of words or sentence segments becomes an aid to reading and understanding this type of printed material.

Although some of the present high school reading programs have been designed as remedial or corrective reading classes, reading instruction is not confined to such classes. All teachers, regardless of the area of specialization, need some understanding of what is involved in developmental reading instruction so that this understanding can be applied to their teaching. Guidelines prepared by the English Teacher Preparation Study sponsored by MLA, NCTE, and NASDTEC state that special attention should be given to reading instruction for the certification of both elementary school teachers and secondary teachers of English. This study marks for the first time, for certification purposes, that a secondary school teacher in the content area should be knowledgeable in the area of developmental reading. This statement does not state the preparation which would qualify a teacher of English to become a special reading teacher, but it does indicate the importance of reading and its contribution toward success in an academic area.

High school instructional programs in reading, existing as part of present courses or designed as independent courses for corrective or remedial purposes, are, for the most part, reflective not only of the mental and physical development of the learner at this stage and his areas of interest but also of his increasing ability to evaluate the quality of his own reading ability and his taste of literature. These differences have, and are, influencing reading instruction at various levels. Since Artley has suggested that the issue centers not around these differences in instructional programs in reading but around the word "real," let us explore some of the types of differences which might alter or influence instructional goals at the elementary or secondary level and determine to what degree these differences exist at each level.

First, let us look at the process or definition of reading with its many linguistic components. Basically, most of us will accept the premise that there are no real differences in the process of reading or in the act of reading at different grade levels which would require a change or shift in basic objectives. Instruction at any level (elementary, secondary, adult) involves helping the student to gain command of the process of reading according to his level of conceptual understanding, his personal or vicarious experience, and his desire for knowledge or enjoyment found in printed material. An ability or command of the reading process includes the acquisition of skills of word recognition, commonly identified as phonics, structural analysis, or decoding; comprehension or deriving meaning and understanding from the printed page in terms of experience and expectation; critical thinking and analysis or the involvement, acceptance, or rejection of ideas expressed by the author in terms of the learner's own beliefs or experiences; the interrelationship of speaking, reading, and writing or the ability to go back and forth between oral language with its flexibility and use of intonational features and gestures and written communication with its more rigid structure; and the appreciation of the world of reality and fantasy contained in the printed page as expressed through the actual reading of books on the pupil's own initiative.

Instruction based upon these objectives under the guidance of a classroom teacher, a special reading teacher, the teacher of a content subject, or the individual himself involves the use, exploration, recognition, and acceptance of the elements comprising the complex process of reading. Basically this process involves the decoding of printed symbols into another form—oral language or inner speech—and the formulation of concepts and ideas based upon the meaning assigned to these words and gleaned from previous experiences. Such meaning may be developed through the personal experience of the learner, oral communication, observation of events and persons, or through previous reading and study of printed materials. Consequently, if this is reading, then there is no "real" difference in the process involved at the elementary or the secondary school level, although, of course, the type of activities requiring reading will be commensurate with the level of individual development.

Students at all levels approach reading with different expectations, and these determine to no small extent what will be received by the learner. The classroom activities planned at all grade levels will set the stage not only for present reading situations but also for the attitude of acceptance or rejection of reading at subsequent levels. Individual needs of the student as expressed by his expectations should be met at all levels. This statement, although becoming a cliché in our professional world, is nevertheless a factor to be carefully considered if the production of reading failures is to be avoided. Do we consider the expectations the student brings to reading? Do we ever consider the readiness needed for a particular assignment if the reading is to be accomplished with efficiency and increased understanding beyond previous assignments or requirements? Do we consider the total progress already made by the student and his present need for help?

Instruction at each grade level must consider the instructional level to which the student has progressed. Teachers must stop starting to teach from the beginning point of reading instruction instead of at the point where the learner has now progressed. There is a sharp contrast between maintaining skills and moving forward and the constant reteaching of the same degree of skills already possessed by the student. Some of our students never get beyond initial reading skills because we never stop teaching at this level. We tend to overteach some aspects which are essential at early stages but fail to realize this type of activity need not be constantly repeated. Even phonics can be overdone! Rather, let us give particular attention to pupils at all levels of reading proficiency by providing for reading for enjoyment and personal satisfaction as well. Reading for the child in primary school, the student in high school, or the adult in retirement should be accompanied by feelings of satisfaction and desire for more literary experience. This goal can be accomplished not by repetitive reading lessons but through the reading of interesting stories and books—stories worth the effort of reading and within the areas of interest of the individual at a given age.

The learner and his interest in reading are important at all levels. Instructional programs in reading at the elementary or secondary school level are planned for the same type of student population. We find both the avid and the reluctant reader. Within these two groups of readers, the range is great. Some pupils will read an endless number of books on the same subject; others will read widely on many topics. Some will read only popular magazines or books of immediate and passing interest. A study, conducted by James R. Squire, to determine the characteristics of a strong high school program in English, indicates that students at this level tend to prefer public libraries to those in the schools because the schools exclude such magazines as *Seventeen, Hot Rod*, and *Sports* and because the books *they really want* to read are not available. An informal survey on reading habits and interests conducted by the Gary Public Library revealed that young people from 9 to 14 read a great many books but the amount of reading dropped rapidly between 14 and 15, increasing again between 60 and 65 years of age. Men working in the steel mills from 8 to 10 hours each day preferred light reading—not too profound or taxing but, with nonfiction as first choice. Adult men liked books on hobbies, recreational activities, and accounts of sport events. It would appear that our reading preferences and amount of reading done at various ages are determined in part by the demands of the culture or society. Hence, instructional programs should consider these individual differences and interests when planning any comprehensive curriculum which includes reading.

A transition must be made from the oral to the written at all levels although the manner in which this transition is done will vary. We readily accept the basic premise that the primary or intermediate pupil may not be familiar with the structure of written communication. All too often this premise is true at the secondary level as well. Speech has its own form and structure. We normally speak in phrases of partial sentences as we engage in dialogue with others. Therefore, teachers should help the pupil at all levels of instruction to become acquainted with the syntactical sentence structure found in print—structures which differ from oral language—by reading aloud many stories, poems, or books. This is a common practice in the primary grades, but, as many authorities have judicially pointed out, this work should be continued throughout the intermediate school, even into the high school.

It is impossible to stress adequately the urgency for more oral interpretation of literature. Too many of our students are not familiar with the written language and its structure, and in many cases they have only recently encountered its standard oral form.

At all levels we find students learning English as a second language. Some will be Spanish-American, Puerto Rican, or Oriental. More recently increasing numbers of students from Greece and Yugoslavia are entering our schools. We cannot ignore the first language background at any level but must give the proper emphasis to oral language and the written counterpart in instructional programs at both the elementary and the secondary levels.

The range of previous experience with books and their ownership will be great for both the elementary and the secondary student. Too many of us do not really know the home background of our students, as related to reading instruction. At all economic and social levels, a young student does not always have the experience of owning a book of his own, although paperbacks have somewhat changed the picture. Many families have a communal home library but fail to give their individual members their own personal books.

In many ways books and magazines can be made available to all students as personal possessions. One inner city classroom teacher collects old magazines and distributes them to the pupils in her class. Coming from homes which have neither books nor magazines, these pupils regard the magazines as treasures to be enjoyed again and again. One day a young pupil brought back a well-worn magazine and asked his teacher to help him read and interpret several pages in particular. This young pupil was engrossed in detailed, labored effort of reading these pages for several days—indeed, he taught himself much about reading during the process. It seems that his mother had become interested in the pictures, especially those which concerned food; but knowing little English and not being able to read, she had turned to her young son to interpret for her. This magazine had been the first piece of reading material which had entered the home, and it had awakened the *desire* for reading and the *need* for learning how to read. A successful reading program at either the elementary or secondary level must be more than a skill-building program. There must, likewise, be a reward or value for learning and using this skill.

What seems to me to be of immediate concern is the direction toward which we should be moving as we plan effective reading programs for both elementary and secondary school curricula. On the basis of the points mentioned in this paper, an articulated program can be developed which accommodates similar provisions for the many levels of intellectual and academic achievement. A successful program of reading instruction at all levels will be cognizant of the process or act of reading, the expectations of the pupil which can be realized through reading, and the characteristics of the learner and his relationship to this process as he becomes an active, enthusiastic reader of books.

THE ROLE of reading teachers and reading specialists will change drastically during the immediate years ahead. One influence of change arises from the technological advances in materials, equipment, and methods concerned with the teaching of reading. Another influence of change springs from the extended range of interest in teaching reading—preschool through adult levels. A third influence of change emanates from the great influx of research aimed toward the improvement of reading instruction. In view of the effect that these influences will have on teaching procedures and activities in the classroom, it would appear that teachers both in pretraining and post-training periods will need to have experiences and courses especially designed to meet their changing needs. Do present-day college curriculums in general provide such experiences and courses? If not, what should they be offering to prepare teachers for changes ahead? The discussion of these questions in the papers that follow offer many fruitful suggestions.

Should Colleges Change Their Curriculums in Preparing Teachers of Reading and Reading Specialists?

MARY C. AUSTIN
Case-Western Reserve University

SOCIAL SCIENTISTS have described the present decade as a revolutionary one. Not only are we living in the midst of profound social change but the development of educational technology and the explosion of knowledge are affecting the role of the teacher. An understanding of the contemporary revolution clearly demonstrates the need for imaginative planning and the formation of desirable guidelines for preparing all teachers, including teachers of reading and reading specialists.

Granted that changes in teacher education cannot be made piecemeal, a commitment to reevaluate the professional training of reading personnel should not imply discarding everything nor, indeed, most of it. Rather, it involves some degree of consensus about goals, a willingness to recognize certain inadequacies of the status quo, skill in conceptualizing the *modus operandi,* and the use of creative approaches for achieving objectives. Nor should the magnitude of the task deter the taking of first steps which, ideally, could influence the next several generations. Can we continue to afford to 'stumble into the future," as John Gardner said, when the future so quickly becomes our present?

Accepting the premise that the teacher is the most vital element in the educational process and that the reading specialist is in the most strategic position to help the teacher, let us examine some possibilities for improving their preparation.

Program objectives

The old adage is no longer true that it is easier to move a cemetery than it is to make curriculum changes. It is still true, however, that a child learning to read is engaged in a relatively complicated process. Moreover, the complexity of the reading act has implications for the nature of teacher preparation.

In the past, educators tended to assume sole responsibility for defining program objectives, whereas, today, it is considered essential to involve consultants from several related disciplines and from the school systems in which the actual training takes place. Included in the first group would be representatives from psychology, sociology, medicine, linguistics, literature, research, and others. The second would bring together teachers, superintendents, principals, supervisors, board members, and members of state departments of education. Through coordinated efforts of each of these segments of the educational community, institutional changes can be created. In fact, the Triple T Project of the U. S. Office of Education may facilitate planning of this type. In the meantime, action should be initiated to bring about more effective relationships among the academic disciplines, the educational disciplines, and the schools. If harmony can be accomplished, this team can formulate fundamental concepts of what reading personnel should learn during their preservice and inservice years.

One could anticipate that sound concepts of growth and development would be important components of both programs, with some emphasis upon developmental imbalances as well as normalcies. Cognitive and affective factors would receive major consideration also with concern for varying learning styles of individual pupils. Special attention probably would be given to the theories of Piaget and Bruner with suggested practices in classroom management arising from these theories. Undoubtedly, prospective teachers would be expected to gain more information and better understanding about communication disorders by becoming acquainted with the work of vision, hearing, and speech specialists in order to carry out classroom activities with children who are handicapped in those areas.

Over and beyond these goals, the program would include a number of others which cannot be predicted at this time. One projection appears particularly realistic, however, since by the year 2000, it is estimated that three major urban centers alone may contain 60 percent of the American population. Hence, it is reasonable to expect that future reading personnel must acquire expanded knowledge and competence in dealing with the problems of low-income areas, with special work on developing skills in language and reading.

Regardless of proposed objectives, the rigidity of teacher preparation which repelled many able students in the past will be replaced by programs of greater flexibility. It is entirely possible that for certain capable, highly motivated young people with A.B. degrees (i.e., Peace Corps returnees) policies which regulate entrance to teaching will be relaxed. The unique experiences of such groups in working with children in social welfare agencies or in community programs will be recognized. In some instances, provisions for these differences are being made by a number of recent training programs. Already many schools are the beneficiaries as these individuals work with children who have learning disabilities.

Changing the status quo

The American scene is characterized presently by an increasing emphasis upon education. Studies relating to teacher competence which were conducted during the sixties have served to stimulate changes in preparatory practices. The reports of Conant (*3*) and the Harvard-Carnegie reading surveys (*1, 2*) have been discussed widely, and now it is anticipated that the Sixty-seventh Yearbook, Part II, of the National Society for the Study of Education (*4*), will influence the future directions of reading instruction. Some of the recommendations proposed in these publications have been implemented, but many have not. General suggestions for strengthening preservice programs included the following:

1. Extend teacher preparation from four to five years to ensure a broad foundation in liberal arts and sciences as well as intensive professional training;
2. Recruit and select outstanding potential career teachers;
3. Require a minimum of two courses in reading for elementary school certification, one in developmental and one in diagnostic and corrective techniques;
4. Require a course in secondary reading for certification at the high school level;
5. Offer elective courses and independent study in reading for undergraduate education majors who wish to specialize in this area of the curriculum;
6. Broaden content and methodology of developmental reading for prospective elementary teachers to provide more attention to both primary- and upper-grade instructional procedures;
7. Emphasize student teaching or internship experiences in realistic classroom settings under the supervision of qualified master teachers;
8. Work more closely with public schools in establishing optimal conditions for student teaching;
9. Conduct follow-up studies to determine the needs of inservice personnel as a basis for revising collegiate offerings; and
10. Evaluate the effectiveness of the whole spectrum of preparation for beginning teachers of reading in order to overcome preservice deficiencies.

Several of the preceding suggestions are currently being employed in one or more colleges throughout the United States. Needed now is a period of acceleration in which priority consideration is given to concentrated inquiry and in-depth development of dramatically better professional practices in preservice education.

During this decade, the grave shortage of qualified reading specialists has become increasingly apparent. Until recently, universities have failed generally to provide both the quantity and quality of personnel required to upgrade the reading skills of this nation's children. Furthermore, a vast shift in emphasis as to the role of the reading specialist has occurred. In moving from a traditional concept by which a supervisor observed, held conferences, and supplied rather pat answers to a program in which the staff works together to exchange professional expertise, the reading specialist actually must be a coordinator, a facilitator, a person who engenders a climate in which people can grow through group processes. He is an individual who must wear several "hats." Obviously, his training must reflect these varied responsibilities.

As a minimum, it has been recommended that the reading specialist possess 1) a master's degree, 2) demonstrated success in the classroom, 3) an apparent desire to greet change as an opportunity for personal growth, and 4) skill in gaining respect and empathy with teachers and pupils. He should also fulfill the standards formulated by the International Reading Association.

Because few experienced teachers receive sabbatical leaves, the usual pattern for those who are interested in reading is to extend their graduate program over a period of several years. The urgency of national and local demands for well-qualified personnel, however, makes full-time study imperative for a shorter time. Nor is an intensive summer workshop of great value in relieving the situation. In fact, many believe that such training cannot be accomplished in less than 18-24 months. Time is required to assimilate the vocabulary, content, and practices related to this field of specialization. Time is necessary, also, for discarding inappropriate concepts about developmental and corrective reading. Hence, it appears desirable that potential career people enroll for a year of professional study and directed observations in classrooms and reading centers. Such training could be followed by a second year devoted to field experiences and a supervised, paid residency in which the neophyte assumes responsibility for working with teachers and children in a designated school. Participation in the planning and conduct of an evaluation of a school's reading program could be an essential part of the program. Through individual conferences and seminars, the resident intern could continue to mature.

For the reading specialist, particularly, there should be continuous access to further formal education and other forms of professional stimulation. He must become a "self-teacher" who seeks personal ways of "self-renewal."

Modus operandi

It would be somewhat less than realistic to minimize the importance of improved curricula, improved methodology, and improved internship experiences as major components in designing new teacher-education programs. The scope of reading is so broad that a number of techniques must be utilized to extend the theoretically oriented college lectures of the past.

To furnish a setting in which there will be intellectual involvement and excitement, professors are making greater use of related projects, demonstrations, case studies, critical incidents, films, and professional literature. But interaction among students and between students and their professors is being fostered by a variety of other approaches also. Microteaching, for example, is serving as an intermediate step between methods courses and actual classroom work.

In a teaching techniques laboratory, similar to one at the University of Illinois, microteaching can add a new dimension to student-teaching preparation. It can be used equally well as a complementary experience in the training of reading specialists. Basically, this approach utilizes a real lesson with live children and a live teacher; and when each presentation is videotaped, the teacher can analyze his teaching behavior in conference with his instructor (or in a group of his peers) as he sees himself in action. Feedback and reenforcement sessions are valuable in helping reading personnel become aware of how the variables of process affect the products of learning. In addition to videotape play-back, microteaching relies heavily on films of master teachers demonstrating behavior patterns of skills to be learned. The promising results achieved by this approach can be attributed to its encouragement for change and improvement.

The years ahead will place greater demands upon readers to react thoughtfully to a rising tide of print. Reading personnel, of necessity, will assume heavier responsibility for helping pupils develop critical reading skills. Moreover, unless teachers acquire the attitudes, skills, and strategies that are fundamental to all inquiry, they will continue to perpetuate their former role as dispensers of factual information. If they are to be successful in their central role as stimulators of learning, colleges must provide for teachers training in inquiry as a process of instruction.

Future reading staff members will receive more work on diagnosing the learning needs of pupils and on planning to meet them. The utilization of programed materials, computer-assisted instruction, and auto-instructional devices will free school people to devote more attention to diagnostic teaching. Indeed, good teaching still bears a striking resemblance to Mark Hopkins and his enthralled pupil, seated on a log.

Rarely do those who specialize in reading work alone. They must be keenly aware of and sensitive to the human-relationship aspects of their positions. For this reason, greater emphasis must be placed upon helping teachers acquire effective procedures for working with groups and/or individuals. Such activities will involve them in the examination of techniques employed in sensitivity training and in interaction analysis. Practicum experiences should be provided in both areas.

Where and how American colleges could begin to effect desired changes in the education of reading personnel should receive primary attention, for improvement in the teaching of reading will result only through dedicated, well-prepared teachers. Individual commitment and organizational action, therefore, must be generated at all levels—local, state, and national. Through such action and generous financial support, the future of reading in the United States will become brighter.

Because the quality of an educated society is involved, the writer suggests that one or more philanthropic foundations properly could devote a funding program for the next several years exclusively to this vast challenge.

This is, indeed, a time for vision in a largely uncharted field. It is also a time for cooperative study and action.

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Pro-Challenger: HELEN HUUS

University of Missouri at Kansas City

THE PRO-CHALLENGER position is relatively an easy one to take, for it assumes that the education presently given to teachers of reading and reading specialists should be changed. The problem was brought to national attention in 1961, when the report by Austin and Morrison (*1*) was published. The 22 recommendations of that report still have to be implemented, and some of the suggestions and ideas included here stem from that report.

In 1964, Groff (*2*) asked 645 elementary education students for their self-estimates of ability to teach reading in comparison with ability in eleven other school subjects. The prospective teachers ranked reading first, but this ranking is only relative and gives no indication of actual teaching ability in reading or any other subject. In 1966, Oyster (*3*) reported, on the basis of a questionnaire study, that more than one-fifth of the 711 reading specialists she surveyed in 15 states had taken no practicum course but apparently would have liked such a course. Furthermore, in states having a certificate for reading specialists, 31 reported holding such a certificate.

These three studies suggest that there is need for change; it is the direction of change that is of immediate concern. Since it is recognized that various countries around the world have different patterns for teacher education, specific details—such as, time elements, course credits, and sequence of experiences—have purposely been left vague.

Preservice education

The basic issues involve, first, the relative emphasis to be given the following components of a teacher education program in general: cultural versus vocational or professional; general versus specialized courses; theory versus practice; and preservice versus inservice education. Then, once the relative emphasis has been decided, the second problem concerns the content and approaches within this framework and the evidence needed to determine competency.

The teacher of reading

The teacher of reading should have a firm grounding in the liberal subjects—history, literature, art and music appreciation, science, foreign language, child development, and the psychology of learning.

Since all elementary and secondary teachers deal with subjects requiring students to read, these teachers should have a minimum of one course in the teaching of reading which includes 1) an analysis of teaching how to read—word recognition and comprehension at all levels; 2) the application of reading skills to other subjects—the study skills in content reading; 3) the evaluation of material read—critical reading skills; 4) an analysis of one's own reading skills; 5) acquaintance with a variety of basic materials and of different approaches to reading; 6) an understanding of patterns of organization for reading; 7) a knowledge of the publications and professional organizations concerned with reading; and 8) knowledge of classroom testing measures and instruments.

But no professor in a reading course can teach students how to teach reading 180 days a year; this knowledge must come from classroom experience. What a college can do is help students understand the theoretical and psychological foundations of learning to read and provide students with some practical applications and suggestions of sources for locating additional information. Thus the student himself becomes an independent learner.

Students need the opportunity, however arranged, for working under supervision with pupils in various situations. One way incorporates microteaching into the first course in reading, a system whereby the student teaches only a portion of a lesson or one idea to an individual or very small group, with evaluation following.

Student teachers should be expected to teach a connected series of reading lessons, in which they ultimately make provision for all members of the class. They should continue their apprenticeship until this goal has been achieved. Regularly planned meetings should be held between those supervising student teachers and the professors teaching the reading courses. Such meetings could take the form of periodic seminars, dinner meetings, or colloquia and could be held alternately at the various schools and at the college. Teachers accepting students would realize this as part of their commitment, whether extra remuneration were offered or not.

Another possibility is to have students participate as members of a team along with professors of reading methods and literature, supervisors of student teachers, reading specialists, psychologists, sociologists, and others, including at least one secretary who would descend on a school and concentrate for a semester or a year on improving reading in that school. This plan is similar to one used in schools in disadvantaged areas of New York City (*4*).

Students should have at least one course in the literature appropriate for the age of student they expect to teach. This course should include the students' reading of the books themselves, not just *about* the books or an anthology of selections.

The student's own personal reading should be promoted, perhaps even assessed as part of his preparation with suggestions for extending this activity beyond college years.

In the not-too-distant future, typical preservice education will consist of a five year collegiate program with liberal arts background, professional courses, and a prolonged apprenticeship where the novice works to improve his skills with the seasoned teacher. Eventually, the college may turn over to the school the induction of students into the classroom with no college credit attached, with a progressive pay scale based on merit, and with stages adequately defined for ease of administration. Thus the entrance into full-time responsibility will vary with the individual and capitalize on those who can make early, lasting contributions.

The reading specialist

In addition, the reading specialist should have a thorough grounding in psychological and educational tests; in research design and statistical methodology; in the organization, financing, and administration of reading programs and services; and in an understanding of the social milieu from which students come and into which they will go.

The reading specialist ought to have had experience as a classroom teacher, preferably at more than one level, so that he has the technical competency to assist others. This experience might be gained in short periods, rather than during a complete academic year at each level.

The reading specialist should be skilled in working with groups within and outside the profession—librarians, physicians, parents, Scouts, "Y" leaders, senior citizens, industries, unions, churches, the disadvantaged, and the like. This experience might be accomplished by having junior positions as a kind of apprenticeship on a rotation basis.

The reading specialist ought to be a well-read person not only in professional and popular materials but in cultural realms as well. Perhaps he should keep for himself a "reading design" similar to those given children!

The reading specialist should see reading-in-the-broad as it operates not only in one country but around the world. This approach would entail information on comparative education, the reading of foreign journals, corresponding with counterparts abroad, attendance at professional meetings, and international exchanges.

The reading specialist ought to be skilled enough in writing so that the proper interpretation of a reading program can be made through the local press as well as in professional and popular journals. Perhaps some experience in journalism or sitting in on a high school course would be of value. Certainly, the specialist should have the minimum essentials for this work from his regular English courses in college.

Conclusion

The aspects of the teacher education program that need change are less in the content area than in the methods of teaching. For this reason, more actual work under supervision is needed, for beginning teachers must feel confident of their own capabilities if they are to help today's students learn to read and to enjoy reading. This training is especially necessary in the face of media that may require less active participation of the learner himself.

The reading specialist must see beyond the trivial problems that could fill each day to the longer and broader view in which reading comes to be for each child a truly magic door.

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Con-Challenger: MARION D. JENKINSON
University of Alberta

IT IS EXTREMELY DIFFICULT to challenge the pertinent comments on this topic made by the writers of the two previous articles. All would agree with their suggestions for updating and reviewing both preservice and inservice courses in education. It appears to be essential, however, that if we are to keep pace with the accelerating pace of innovation, three additional aspects need to be examined carefully: the future role of reading in the school curriculum, the application of findings concerning recent innovations in teacher training, and the relevance of the research on teacher-learner interaction.

The future role of reading

It will be a great disservice to education in general, and to reading in particular, if we continue to operate on the assumption that reading will continue to be the prime medium for learning. Other learning media must be linked with whatever we are undertaking in the language and reading program. Until comparatively recent times these technological inventions have been considered only as additional aids, but it seems likely that they will become a hub around which all other teaching will revolve. Many of these new inventions, however, do demand the ability to read, though the appropriate reading skill may be specific to the individual technique.

It must be remembered, too, that the new inventions of film, radio, and television are also languages; their syntax and grammar are as yet unknown. Each codifies reality differently, and each medium undoubtedly conceals its own unique metaphysics. We are just beginning to explore the grammars of these new languages and to see their possibilities in enlarging and extending the type of experiences today's children undergo. And so we are moving from using films merely as visual aids toward children's producing their own films to indicate their interpretation of reality.

As the writer (*2*) has stressed elsewhere, McLuhan has pointed out that future civilizations are more likely to be oral cultures than book cultures. "Oracy" rather than "literacy" will be the predominant feature. But a frequently mistaken assumption is that McLuhan is postulating a nonliterate or an alliterate community whereas he speaks of a *post*-literate world. This difference is a very real one. Though the new media stress oral communication, they, in fact, assume literacy—literacy of quite a high order. These new media do not derive their inspiration primarily from an oral culture but rather from a literate and frequently literary one. They have moved on a stage perhaps to a new oracy—but this move depends upon a pervasive literacy. McLuhan (*3*), who has been castigated as the arch enemy of books, makes one point which is pertinent to our current concepts of teaching reading:

> As a simple consequence of this participational aspect of the electric technology, every kind of entertainment in the television age favours the same kind of personal involvement. Hence the paradox that, in the television age, Johnny can't read because reading as customarily taught, is too superficial and consumer-like an activity. Therefore, the highbrow paperback, because of its depth character, may appeal to youngsters who spurn ordinary narrative offerings. Teachers today frequently find that students who cannot read a page of history are becoming experts in code and linguistic analysis. The problem, therefore, is not that Johnny can't read but that in an age of depth involvement, Johnny can't visualize distant goals.

The writer would suggest, however, that it is *reading*, particularly *book reading*, that will enable Johnny to visualize distant goals. Depth, complexity, involvement, and mental activity have long been recognized as the unique quality of books. Complexity, variety, portability of books, and the individual nature of reading, all must be stressed. Of even greater import however, appears to be the need to ensure verbal comprehension *in depth*.

It is this need to explore ways of developing more adequate comprehension at later grade levels that must be emphasized more in teacher-training courses. A further corroboration of this need is given by the fact that the recent N.S.S.E. Yearbook on Reading (*4*), deplores the paucity of attention that has been and is being given to the complexities of reading beyond the beginning stage.

It has been suggested by McLuhan and his associates that print is linear in form and format, while other media present multiple perspectives. The physical impact of print in line sequence is important since not only does it induce a linear, visual sequence but ideas are also presented in this way. This linear quality of books is perhaps the greatest contribution that books have to offer. Patterns created by lines are almost infinite—to which television itself is a witness—but the linking of one idea with another in the sequences of printed language indicates relationships and continuity and sequence. Basic to man's questing for knowledge is his desire to seek to understand relationships between phenomena, people, ideas, and visions and to try to fathom the eternal *whys*.

Books are the storehouses of individual and communal understanding of these relationships. Print, because of its linear quality, is still the best media for communicating these relationships. It is thus imperative that reading be taught so that the links between concepts, ideas, feelings, and opinions become explicit for the reader. Unfortunately, many teacher training courses give somewhat perfunctory attention to ways and means of developing depth of comprehension skills.

Recent innovations in teacher training

Most writers on teacher education accept the common platitude that teaching is both an art and a science, but usually the art is stressed at the expense of the science. Unfortunately, we know little about the science—in the sense of exact knowledge about teaching. Hopefully, we are in the process of liquidating part of our ignorance in this respect.

In the past five years, several new techniques have been introduced into teacher training. The following will be described briefly since they appear to be particularly apposite if adapted for the training of teachers of reading: microteaching, videotaping, lapse photography, tape recording, clinical exercises, and vignettes of teaching.

Microteaching

This was first developed at Stanford University with the dual purpose of providing students with practice before they go into schools and also providing research data on training conditions. Brief teaching sessions are videotaped and immediately played back to the trainee so that he may see how he has taught. Small groups work together; the remainder of the group and the supervisor criticise the trainee's performance. The student may then reteach the lesson with another group. Two main benefits that accrue from this activity are that, from the beginning, the trainee becomes aware of the differential effects of his teaching activities and he also is initiated into the art of constructive self-criticism. It is obvious that this technique could be used with effectiveness for every aspect of the teaching of reading.

Videotaping

It is becoming fairly common for education faculties to have a number of videotapes of actual teaching situations available. These can be used for illustration of techniques or analysis of lesson planning and classroom organization. Such videotapes are now replacing direct observation in many institutions. Another use which has been made of videotaping is to record student teaching performance, which is then viewed by both the critic teacher and the college supervisor. Not only does a greater degree of objectivity result but the interaction in discussion of the rating appears to be mutually productive for both parties. Again, the pertinence of this technique for teaching reading is obvious.

Time-lapse photography

Photographic records are made at set intervals, usually at the rate of one per 30 seconds, by cameras which are placed strategically in the classroom. By assembling the photographs in sequence and collating them either with tape recordings or reports from raters, a comparatively accurate picture of the classroom activity is obtained. This method is considerably cheaper than videotaping. It permits analysis of the apparent attention level of the students as well as the shifts of activities. Several investigators have used this technique to study reading situations and have found that it yields considerable insight into both group and individual activities.

Clinical-teaching exercises

A sequence of experiences is arranged so that the trainee is exposed consecutively to more complex situations. He may begin by teaching an individual child and may then gradually move to a group of two or three, on to one of eight, and eventually to the whole class. Or, he may undertake the teaching of one or two individual pupils and make this work the basis of a detailed case study. Frequently the areas that elementary school trainees undertake are in reading or mathematics. Children who have particular problems are usually excluded for the teaching by young trainees. These activities are clinical in the sense that individuals work through one particular program and study one or two pupils in depth. This type of activity has been used in teacher training in Britain for many years, and with extended training, is now being used more on the North American continent.

Vignettes of teaching

Short films of particular teaching activities have been made to indicate alternative ways of dealing with classroom organization and problems or to present content. A few of these are available which illustrate practices used in teaching reading, but we need a greater variety and more widespread use of such films.

It is vital that those responsible for both inservice and preservice training of teachers must adapt and utilize all these newer techniques.

Research on teacher-learner interaction

During the past decade, several educational researchers have begun to examine and analyze activities within the classroom.

Though we need to be aware of all the findings of this research in teacher education, perhaps the work of Bellack and his associates (*1*) has major significance for those training teachers of reading and language. These authors concentrated upon examining and analyzing the language used within the classroom.

We did not need research to reveal to us that a teacher most frequently uses spoken language to promote learning. What is interesting in the analysis of classroom language is the variety of diverse purposes that apparently lie behind the type of language used. The evidence suggests that teachers use words mainly to *describe, designate, define, narrate, explain, illustrate, compare/contrast, classify, interpret, summarize,* and *give opinions.* Other reasons for classroom language, of course, may be present, but those listed occur most frequently.

These purposes behind the teacher's language are always implicit, but yet in the teaching-learning situation, reciprocity occurs. Teachers use language in these ways but also seek to develop corresponding language activities explicitly in their pupils. This latent objective needs to be examined more closely in order to explore the most effective means by which teachers can elicit these language behaviors from the children. Awareness of the various purposes for which language is used should also assist student teachers in improving classroom talk.

It would seem essential that students-in-training, especially those concerned with reading, need to become aware of the nature of the language interaction in the classroom and, in particular, how language frequently is the principle mediator in the learning situation. It would seem that by studying his own verbal behavior, the teacher will gain insights into his own teaching and that by providing role-playing situations, the student teacher can begin to improve techniques. The future teacher of reading must learn to use language to elicit the reader's understanding of the printed page. Penetrating questioning and appropriate discussion initiated by the teacher are still the most effective methods of developing reading comprehension.

It is generally agreed that we must increase and maintain a higher level of teacher competency. It is thus imperative that we ensure that students have adequate knowledge of recent developments, both in substantive and pedagogical fields. Future teachers need a wide, liberal education, so organized that it is not completely unrelated to their future vocation. It would seem to be possible to organize courses which have sound substantive content but are also pedagogically pertinent. For example, a course in linguistics seems essential for future reading teachers; but such a course, while sound linguistically, should also contain elements which are apposite for education. We shall need to work cooperatively to obtain such courses, but the result will be worthwhile.

The scope of education courses needs also to be examined to ensure that teachers are better equipped to evaluate and examine objectively innovations in the future. It appears that the rate of change in education is not likely to diminish. If we are to withstand commercial pressures and to prevent a constant impact of bandwagons, teachers must become more sophisticated in their assessments of new programs.

There have been many definitions of teaching, but that of "causing to learn" is not only the simplest but also the most apt. In teaching future teachers, the models presented within the preservice institutions have significant influences on future teaching behavior. Updating of methods and innovation are as necessary in training institutions as elsewhere in the educational system. Whatever the level of teaching—whether in schools, in teacher education institutions, in inservice situations—and wherever we want to cause learning, our motto should be "Do as you would be done by."

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Seventeen current issues in reading have been discussed in the preceding chapters. In the main, these chapters dealt with reading issues as they exist today. The writer of the following article will now pick up her crystal ball to see if she can catch a few glimpses of what may happen to these present *issues in 1985 or 2000. In other words, an attempt will be made to portray some of the characteristics of each of the seventeen issues discussed in the preceding chapters as each may shape up in the future.*

The Future of Our Current Issues in Reading

Nila Banton Smith
San Fernando Valley State College

THE STIMULATING DISCUSSIONS in the preceding chapters had to do with *current* issues in reading. In this chapter the *future* of these current issues will be discussed.

But first a word about change in general. Change has been greater during the past ten years than in the preceding 1000 years. Many generations of change have been compressed into the span of ten years—so brief a period that it is scarcely a second on the clock face of history! And change will march relentlessly on during the next ten years and the next ten years and the next ten years, ever increasing in velocity and volume.

Let us stop for a minute to consider the numbers who will be affected by *educational* change alone.

According to the U. S. Office of Education the school population—staff and students—in the United States today is equal to more than 30 percent of the nation's total population. This percentage may also be true in several other countries. Since such a large number of people will be affected by oncoming changes in *education,* our responsibilities as teachers seem urgent and, at times, almost overwhelming.

Our obligations in regard to educational change become even more acutely apparent when we stop to consider that by 1985 children who entered kindergarten in the fall of 1968 will have been graduated from college. These children and children in our elementary grades at present will be spending most of their lives in the twenty-first century. In fact, at the turn of the century the present kindergarten children will be thirty-seven years old, having pursued their careers and assumed their respective roles in American society for perhaps half of their respective life spans.

These are the students whom we are teaching today, the students whom we shall be teaching next year and in the succession of other *immediate* years ahead. Are we preparing these children now to live in the space age? the nuclear energy age? or are we preparing them for the forties, fifties, or sixties?

The world in 2000

Let us take a quick kaleidoscopic view of the world in 2000, the world in which these present-day children will be living a good share of their lives.

By the year 2000, man will be exploring the limits of the solar system and living underground on planets. Man may have towns or cities on space stations where travelers will dock to await shuttle service to other planets.

It is the ocean, however, that looms up as the most promising frontier. By 2000, scientists will have explored untouched areas, depths, and locations in the sea and will have found new ways of increasing and obtaining wealth in food and minerals. Colonies of people may be living beneath the floors of the ocean. In fact, whole cities may develop in such locations.

The potential resources of the ocean are tremendous. It may well be that a scientific, technological, economic, and political struggle for control of the wealth of the sea by different nations will be a catastrophic event in the twenty-first century.

Weather may yield to nuclear power plants in the years ahead. A General Electric executive says that heat released from a nuclear generating station in the Los Angeles area would force to an altitude of 19,000 feet the smog layer that hangs over the city. In addition, a 30-mile per hour sea breeze would be drawn in from the Pacific, piling up warm air over the San Bernardino

Mountains, condensing out as rain over the desert all the way to Arizona. Such a use of nuclear power plants probably also would be one solution to the pollution problem in other cities.

Even our large centers of population will change, according to Kahn and Wiener (*3*):

> The United States in the year 2000 will probably see at least three gargantuan megalopolises. We have labeled these—only half-frivolously—"Boswash," "Chipitts," and "Sansan." Boswash identifies the megalopolis that will extend from Washington to Boston. Chipitts, concentrated around the Great Lakes, may stretch from Chicago to Pittsburgh and north to Canada—thereby including Detroit, Toledo, Cleveland, Akron, Buffalo, and Rochester. . . . Sansan, a Pacific megalopolis that will presumably stretch from Santa Barbara (or even San Francisco) to San Diego. . . .
>
> While all three will be recognizably American in culture, they will most likely be quite distinguishable sub-cultures. Sansan will presumably provide an informal "Bar-B-Q" culture, which has sometimes been called "wholesome degeneracy," and will include large and self-conscious, alienated, New Left, "hip," and bohemian groups. Chipitts, recently the site of successful architectural and urban-renewal programs, will probably still have traces of both the "Bible Belt" and Carl Sandburg's "raw and lusty vitality." Boswash will, of course, be "cosmopolitan"—the home of New York liberals, Boston bankers, tired or creative intellectuals in publishing, entertainment, and the arts, and political Washington. The three megalopolises should contain roughly one-half of the total United States population. Study of the United States in the year 2000 may largely be of Boswash, Chipitts, and Sansan.

This prediction has two implications for us as teachers: we must increase our specific planning immediately for the teaching of reading in *urban* centers and for the teaching of reading to *variant cultures*. So far we have barely touched this area of reading.

As for the home, Seaborg, chairman of the U. S. Atomic Energy Commission, says the following:

> By the year 2000, housewives . . . will probably have a robot maid . . . shaped like a box [with] one large eye on the top, several arms and hands, and long, narrow pads on each side for moving about.
>
> A home computer in the kitchen will automatically keep a bank ac-

> count and household budget up to date, work out a tax return, keep stock of household supplies, and decide on the best way to store food in the refrigerator.
>
> Entertainment in the home will change.
>
> It could happen that, sitting in all the homes of America, there will be an electronic "entertainment center," hooked up to a central computer serving the whole country. This entertainment center will supply not only television or radio programs but also will spew forth a fresh copy of the daily newspaper, printed on the spot with color pictures. When you feel like hearing music, you will be able to dial a number, choosing any piece of music—the newest hit or the oldest plainsong—performed by any artist you want. Perhaps you will not only be able to hear the music, you'll be able to *watch* the performer or the orchestra or the opera or the musical comedy on "Sight-and-Sound" tape.

Teaching and learning in the home will take on new directions. Some are predicting that the school as such may eventually disappear, leaving the home as the basic learning unit.

Goodlad (*1*), for example, says:

> It is quite conceivable that each community will have a learning center and that homes will contain electronic consoles connected to it. This learning center will provide not only a computer-controlled video tape, microfiche, and record library, but also access to state and national educational television networks. It is even possible that advanced technology will return the family to center stage as the basic learning unit.

The future of our current issues in reading

With this brief background in regard to the world in which our present students will be living, an attempt will be made to forecast some characteristics of the seventeen issues discussed in this volume in terms of their developments tomorrow and in many other tomorrows. *Tomorrow* is the most dangerous word in our present vocabulary; at the same time it is the most challenging. So we may as well plunge in and see what our crystal ball reveals.

Different approaches to reading

In preceding chapters you read a discussion of basal readers, i.t.a., programed instruction, and the linguistic approach.

In years past, there usually has been a long period of time in which reading materials and methods have been quite similar, so similar, in fact, that an uninformed examiner might arrive at the conclusion that all had been turned out of the same matrix with just a slightly different crimp here and there in the contour of the mold. Then, rather suddenly this pattern was abandoned, and readers representing it marched out of classrooms passively, silently, noiselessly to repose in dusty attics of homes or unused storage rooms of schools. Then a new plan became popular, and all basal reader series reflected this plan until another turning point arrived. Thus, epoch after epoch of reading instruction passed through American schools.

Not so today! The basal reading programs, themselves, vary from one another. Each has its own unique characteristics, and each is continuously adding new features.

One of the salutary changes in the realm of basal readers is the appearance of multiracial series, in which different races are depicted and their activities are woven into the content. Other new developments in readers are the provision of a wealth of other books to supplement the readers themselves, the publication of readers adjusted to slow groups and good groups, annotated teachers editions, supplemental phonic charts, records for listening, films, and language books. Many changes have been made in basal readers in the past five years. Readers probably will continue to change rapidly, perhaps drastically.

Then we have the several innovative approaches which have sprung up during the past ten years: the experience method, Words in Color, and the three discussed in preceding chapters—i.t.a., programed instruction, and the linguistic approach.

What is going to happen to the new types of basal readers in 2000? What is going to happen to the entirely new approaches recently introduced? Their future may take different directions.

Some of these approaches may be with us at the turn of the century but operating in expanded and in different formats.

Others of the new methods may remain much as they are, and they may be provided to teachers along with several other sets of material. Under these conditions, the teacher may choose from several methods those best suited to children having different styles of learning.

If history repeats itself, some of our current new methods may disappear entirely and then come back fifty or a hundred years later, wearing a different cloak of philosophy. The writer has found in her research that there are such things as historical cycles in reading. A useful idea in reading, it seems, is never lost. It may appear in fairly undeveloped form, attract considerable attention, then drop out of sight. No more is heard of it for several decades. Then suddenly it pops up again much improved in format, methodology, and content. This is the way of progress in reading. So if some of the current new methods have disappeared by 2000, they probably will return and will be still more useful embedded in a twenty-first century framework.

In addition to our *current* new methods, some other new methods that we do not even dream of at present will have appeared by 2000.

Two electronic devices for teaching reading which we didn't even dream of a few years ago have recently emerged—the computer and the talking typewriter.

The computer is being used in teaching beginning readers in the Brentwood School, East Palo Alto, California. In this experiment, a master computer which does the teaching has 18 terminals. As the children come to the classroom, each one sits down before a screen at the end of his terminal. Various pictures or words begin to dance on the screen in front of him. Soon he is asked by the computer to make a response. This he does with a light-projecting pen. A voice from the computer directs, commends, or corrects him as he continues to work with the screen and the light-projecting pen.

The talking typewriter is also under experimentation in teaching reading in public school systems. In using this device, children work in booths with typewriter keyboards. The keyboard may be set for free exploration in case a child is to work at home with the family machine. For directed teaching, however, the machine is programed with coordinated visual and audio instructions to reinforced specific learning behavior. For example:

when the letter A appears on display and is sounded by the speaker, the child can depress the A key only. None of the other keys will work for him. If the speaker asks the child to spell *cat*, he can depress only the correct letters in the correct order. None of the other letters on the keyboard will respond to his touch.

The talking typewriter as an instrument for teaching beginning reading is now under experimentation in New York City; Philadelphia; Chicago; Chester, Pennsylvania; and elsewhere.

The published results of using the computer and of using the talking typewriter show startling successes in reading. No one, however, has as yet measured the cost of such instruction for school use, the long range skill effects, or the human consequences of what these early reading successes involve.

Comprehension

The old topic of comprehension comes up for discussion perennially. A tremendous amount of research has been done in this area, but earlier in this volume, we asked "Do We Apply What We Know About Comprehension?" In this paper, the future of what we know about comprehension will be discussed immediately following the descriptions of the two electronic devices because it is probably in this area of reading instruction that the teacher of the future can make her most significant contribution.

For years when we referred to meaning-getting in reading we used the all-inclusive blanket term of "comprehension." As a result of research, we finally began to break this broad blanket term down into different kinds of meaning-getting processes.

Now at the present time we talk about *literal comprehension, interpretation, critical reading,* and *creative reading.* It is in the last three of these that the greatest future of the reading teacher reposes.

A child may learn to recognize words and to answer literal comprehension questions, but he is educated only when he has learned to *think.* Mechanical devices may do brilliant jobs of informing and training, but it is difficult to see how they can produce the kind of thinking that takes place in Socratic dialogue.

One of our most urgent objectives for the future is to teach students to *think;* hence, the emphasis on all of our teaching in reading should be on interpretation and critical and creative reading. The extent to which a computer can develop these kinds of thinking processes is highly questionable. The computer may offer a child three answers from which he is to choose one. In this case, the child is confined to the three answers resulting from someone else's thinking, rather than doing his own thinking and coming up with his own unique answer. The computer may build a background designed to stimulate the student to ask a certain question or to make some other kind of specific response, but it cannot guarantee the student's response.

A certain gentleman told the writer about observing a student working with a computer. The computer enthusiastically built a background up to a certain point and then said, "Now, what question would you like to ask?" The boy remained stoically silent. But after a second or two the computer said, "That's a very good question," and went right on answering the question which the boy did not ask. It continued for the whole period answering questions unasked by the boy. One cannot standardize thinking!

Thinking, discriminating, decision-making individuals are what we need in future America. Our students can only develop in these ways through participation in group thinking when each one expresses his own thinking orally, checks others' thinking, is checked by others, adds to others' thinking, and lets others add to his—all of this activity guided by an astute teacher who will toss in a remark or question at the proper moment to stimulate deeper reflection. Electronic machines cannot enter into group communication.

Computers or no computers, the teacher will have the major responsibility for teaching interpretation of reading content and the thinking processes attendant upon interpretation, critical reading, and creative reading. To do this work in the future she must be an adept leader of discussion.

Teaching reading in the content fields

One of the issues discussed in preceding chapters was "Are We Really Improving Reading in the Content Fields?" The writer believes that we are improving reading in these areas but that a great deal remains to be done.

In the past, tradition has ordained that reading should be taught during special periods set aside for the express purpose of giving the child control over the skills of reading. Likewise, tradition has dictated that mathematics, science, geography, and history should be taught at specific times in the daily program for the purpose of implanting characteristic knowledge in each of these fields, usually with little or no consideration being given to reading development as one aspect of this specialized instruction.

During recent years, however, there has been a dawning consciousness of the need for teaching reading in the subject areas of science, social studies, and mathematics, in addition to just teaching reading with a basal reader during a certain period set aside for reading.

Due to the explosion of knowledge, world tensions, and the technological revolution, we know that individuals of the future will need to read wisely and discriminatively in the areas of social studies and science; and because both social studies and science are tied up with math, students will need to read well in this latter area, also.

We know also that studies in education have revealed that unique skills are required in reading in different subject areas. Studies have also revealed that when unique subject-matter skills are given practice improvement in achievement takes place. We will find out a whole lot more about these special skills in the future.

There are some people who think that in the future we will have reading specialists in social studies, reading specialists in science, and reading specialists in math. It would seem more likely that we shall have teams of teachers, each of whom has majored in one of these fields and each of whom has been required to take courses preparing him to teach reading in his particular field.

One can only wistfully hope that in the near future, colleges will require all students preparing to teach in high school, regardless of their major, to take some courses in reading.

At any rate, something special will be done in teaching reading in content areas in the future. We may be sure of that.

Speed reading

Speed reading is discussed in the chapter entitled "Speed Reading: Is the Present Emphasis Desirable?"

Speed reading will become increasingly important in the years ahead as information accumulates. It is hoped, however, that some of the misconceptions existing among laymen may be corrected. For example, the layman is under the impression that we should read everything in a set number of words per minute, while most educators believe that we should vary speed in terms of purpose and content of what we are reading.

Another mistaken idea is that a speed reading course will cure all of the difficulties of a remedial reader. It is reported that many of the adults who take a widely advertised speed reading course do so because they have a child who is having difficulty in learning to read. Such a person thinks that if he can learn this speed reading technique, he then can teach the technique to his child and the child will become an individual who will be able to study in his text books at a phenomenal rate. As a matter of fact, the child may not be able to recognize words, or he may not be able to get meaning from print, or he may not be able to make use of the study skills. If speed pressure is put on while a child is seriously deficient in some of these fundamental skills, he may be worse off than he was before. Furthermore, the cause of this disability may be physiological, psychological, emotional, or environmental; and a speed reading course is not going to take care of any of these deeper causes.

Parents will have more and more to say about the schools in the future and it is hoped that through public relations mediums more information can be disseminated concerning the complexity of the reading process and its many ramifications.

Insofar as the schools, themselves, are concerned, undoubtedly the new electronic devices for teaching will tend to increase speed. Computers, videotapes, films, and other devices will present reading material for set segments of time. They will not wait for the slow reader. So the wide use of electronic devices may increase speed as a by-product. However, the reader who has no reading difficulties other than slow reading, should have special help in this area, for in the future he certainly will need to cover a tremendous amount of material not only as a student but during his entire lifetime.

Sequential skills in elementary and high school

The topics "Sequence of Skills in Reading: Is There Really One?" and "Are There any Real Differences Between Reading Instruction in the Elementary School and In High School?" were discussed in previous chapters. In this paper these two topics will be combined for discussion under one heading.

As for "sequence of reading skills," there is much variance of opinion here; and any sequences that have been advocated have resulted from logic, not from scientific investigation. Therefore, fixed sequences are subject to change in the future as penetrating longitudinal studies proceed.

As for differences in elementary and secondary reading, the writer believes that in the future we shall increasingly come to realize that there really are no *new* reading skills to be taught in high school. The foundation for all skills should be laid in the elementary grades, yet there will be differences between elementary and secondary reading. These differences will reside largely in need for review, degree of difficulty, and points of emphasis. Continuous review will be necessary to keep alive the skills developed in the elementary grades. These skills will need to be applied to more difficult material. There will be shifts to greater emphasis on the study skills in content subjects, on vocabulary in different subject areas, on meaning procedures to meet new demands and dimensions, and on flexibility in using speed to cover the volume and variety of material that will be encountered.

In the future, however, several *new* skills will be needed in working with the many different media in schools. Students will need to read indexes prepared by computers; telewriting of lectures given at distant places; microfilm newspapers; microtransparencies enlarged on the screen; data and statistical language processed by computers; charts and graphs on screens; microfiche in files of library books; and many signs, abbreviations, and codes necessary in plugging-in for specific information.

These skills involved in the use of different media will be needed in the grades as well as in high school. Their sequence will not be neatly sketched out on paper. Rather, they will be taught functionally as needs arise.

Remedial reading

Remedial reading is discussed in the chapters entitled "Dyslexia: Is There Such A Thing?" and "What About Special Theories of Teaching Remedial Reading?" The latter chapter deals with the Delacato, Kephart, and Frostig theories and the theory of administering drugs as possible agents for reading improvement.

Among these theories, perhaps the drug theory has the greatest future. As indicated, Smith and Carrigan administered vitamins and hormonal treatment and later tranquilizers to remedial cases; Burks measured the effects of medication on brain damaged children. Staiger gave a psychic energizer to a group of remedial readers. While these studies had some beneficial effects in other ways, none of them improved reading ability. Perhaps, however, they were forerunners of a very great breakthrough to which we may look forward in the future. Biochemists and physicists are now conducting some exciting studies in the use of drugs to increase learning ability and to improve memory.

At Abbott Laboratories in Chicago, Plotinkoff has tested a drug named Cylert on rats and discovered that it increased their learning capacity up to five times that of untreated rats and that this learning is permanent. McGaugh, at the University of California at Irvine, also has experimented in giving memory-enhancing drugs to rats. He found that a treated rat remembered getting out of a maze better than an untreated rat. McConnell of the University of Michigan and Byrne of Duke University have experimented with memory transfer by injection. Brain tissues taken from trained animals have been injected into untrained animals. The results suggest but do not prove, as yet, that learning can be transferred.

Possibly in the year 2000 in certain cases where learning is slow or memory is weak, the teacher can give a pill to a remedial reading case to improve his ability rather than spend long hours drilling him on phonics.

Krech (*4*) says:

> Both the biochemist and the teacher of the future will combine their skills and insights for the educational and intellectual development of the child. Tommy needs a bit more of an immediate memory stimulator; Jack could do with a chemical attention span stretcher; Rachel needs an antiocholinesterase to slow down her mental processes; Joan, some puromycin—she remembers too many details, and gets lost.
>
> To be sure, all our data thus far come from the brains of goldfish and rodents. But is anyone so certain that the chemistry of the brain of a rat (which, after all, is a fairly complex mammal) is so different from that of the brain of a human being that he dare neglect this challenge —or even gamble—when the stakes are so high?

Exciting things which may affect reading are also taking place in the field of medicine. For example, a hospital in New York has recently established an intensive care unit provided expressly for prompt treatment of children born as blue babies. These babies are not breathing when born. If normal breathing is not restored promptly, brain injury results. In this hospital the physician breathes into the child's mouth while it is being rushed down an elevator and into the special clinic. Here mechanical means of providing artificial respiration are quickly applied. The child is then diagnosed to find out why he is not breathing, and corrective measures are taken.

When all hospitals have intensive care units for blue babies, our numbers of remedial reading cases will probably be decreased considerably.

In the years ahead, the computer may prove to be very useful in diagnosis. It will be able to take case histories, give and correct some of the diagnostic tests, and keep cumulative records.

Many new diagnostic instruments will have been developed by

2000, and many new techniques and media for improving reading disabilities will have been discovered. In other words, by the year 2000 the *science* of remedial reading will have reached a sophistication undreamed of at the present time.

Research in reading

The first chapter in this volume is entitled "How Good is Research in Reading?" Educational research always has been an issue and still is an issue.

Gage, as quoted in the March 1968 *Phi Delta Kappan,* made an extensive review of educational research in comparative studies of methods, ability grouping, and qualities of teachers. He says that all of these studies failed to show that the item studied made a consistent and significant difference.

He considered the possibility that the negative results are due to methodological errors, such as concentrating on one narrow segment of achievement, using insensitive tests, employing poor controls, exerting overcontrol that holds constant too much and thus restricts the differences, and using too stringent a criterion of statistical significance.

Gage then leavens his criticisms somewhat by telling how excruciatingly critical research workers are. He says,

> The disparaging statements about the yield of past research may reflect the fact that research workers are inveterate critics. Their reflex on hearing about positive findings is to look for flaws in rationale, design, sampling, measurement, and statistical analysis. Only when such a quest for error is unsuccessful are research workers willing to grant credence to positive findings.

And so the issue continues.

One thing of which we can be certain is that there is more interest in research and more studies are being made than ever before. USOE grants have stimulated and made possible many studies in the field of reading, but this research is controversial, too. It is generally agreed, however, that research techniques are improving and will continue to improve in the future.

One of our great deficiencies in research has been inadequate dissemination. Great strides have recently been made in dissemination with the use of the Educational Resources Information Center or ERIC established by the U. S. Office of Education. Its facilities consist of one central ERIC and 18 ERIC clearinghouses.

Within a year or two, when the ERIC data base reaches significant proportions, ERIC will consider the distribution of its magnetic tape files to institutions willing and capable of doing their own mechanized storage and retrieval operations. In still a few more years, ERIC will have developed a centrally shared computer system which not only will link the ERIC clearinghouses but also will allow direct access to the ERIC files by USOE Regional Educational Laboratories and selected educational organizations. By the year 2000 the retrieval, storage, and dissemination possibilities will be greater than imagination at this time can possibly conceive.

By 2000 the tremendous influx of innovations will offer a strong stimulus to research. Probably increasing amounts of federal money will be available for research. Many more educators will be trained in research. Computers will be more commonly available for statistical analysis, linear programing, factor analysis, and stimulation techniques. Premium will be placed on creativity in research as in other aspects of education. As a result of these influences, undoubtedly our present research designs and statistical models will be improved. It seems reasonable to predict also that many new and more effective research techniques will have been developed, especially in regard to the effects of human elements on success in reading.

The disadvantaged

One of the previous chapters asks "Is the Reading Instruction that We Are Offering the Disadvantaged Adequate?" Undoubtedly, all of us would answer "No" to that question, but we have made a start which many people predict in years ahead will swell into such proportions that by 2000 the disadvantaged will have disappeared from American society. At least intentions are directed toward this goal. At present, funds are inadequate. Once the Vietnam war is ended, money should be available to raise the environment, the education, and the work of the disadvantaged to higher levels.

Let us consider the young child first. The child who is one year old at present will be 32 in 2000. So we need to work as fast as possible.

By 2000 we will have nursery schools in all the public schools, but what will take place in the more immediate future to work up to this possibility?

There is much talk at present about utilizing the early years of childhood for acquiring knowledge and learning skills. Maya Pines' book *Revolution In Learning* has probably had a profound influence in developing this thinking.

She opens her first chapter by saying, "Millions of children are being irreparably damaged by our failure to stimulate them intellectually during their crucial years—from birth to six. Millions of others are being held back from their true potential."

This brief quote indicates the tenor of Pines' thinking and seemingly of the thinking of many other educators.

Perhaps a harbinger of what is to come is a planned nationwide television program for educating preschool children. This program—sponsored by the U. S. Office of Education, Carnegie Corporation, and Ford Foundation—is designed to bridge the gap until nursery schools can be established in the public schools; and it seems that that this program is going to implement the growing swell of thinking in regard to providing more learning substance. The aid is ". . . to stimulate intellectual and cultural growth of young children—with emphasis upon those with disadvantaged backgrounds."

Examples of the content of this nationwide program include story reading of children's classics and showing animated characters, ABC's and numbers 1-10 taught entertainingly through animated series, and game techniques to stimulate reading readiness and reasoning power. People in charge of this program say, "By using the most powerful, omnipresent medium . . . we may . . . be creating a new American institution: a wall-less, nationwide nursery school."

These and several other signs indicate that we are moving toward the teaching of more skills and subject matter to young children. So in the future young children probably will be very much more sophisticated in school learning than those at the present time.

By 2000 the school will probably reach directly into the home in its effort to educate young children. A revolutionary federally funded pilot study is now under way. It is innocuously called "Parent and Child Center." This project concentrates on the family and on the child *before* the age of 3, offering many similar services now offered by Head Start in the 3-to-6 age group.

Such a movement is really revolutionary because it represents direct government action at a level earlier than at any previous time in our nation's history. Perhaps this project presages future public education of children from the time they are born.

We will have an easier time teaching reading when young, disadvantaged children have the advantages of preschool education to develop them in all facets of child growth.

As for adult illiteracy in our country, hopefully, that too will have disappeared by 2000.

The writer had an exceedingly interesting conference with Joseph A. Mangano, of the Bureau of Basic Continuing Education in the State of New York in regard to adult illiteracy. Mangano believes that continued education for adults will, in the future, become a part of the public school system and that there will be comprehensive adult centers open all day and evening, twelve months of the year. Teacher preparation colleges will have special programs for preparing teachers to work with adult illiterates as well as with disadvantaged children in the public schools.

Mangano states that there is tremendous response in New York to courses for the illiterate but that many more women than men are seeking literacy. (This trend is good for the children they are raising.) These women want to work to add to the family income when their children are raised. They do not want to become domestics, and they know they must have an education to do other kinds of work.

As far as working as aides in schools is concerned, Mangano suggests that these illiterate women be recognized at different levels of achievement. They might begin with yard duty, passing materials, etc. As they progress, they might become more actively involved with children until they are finally given some teaching duties. Possibly after this step some will want to attend college and prepare to be teachers.

The future is extremely promising in regard to the disadvantaged. Let us continue and increase our efforts in the immediate future.

Visual and auditory modalities: how important are they?

Another issue discussed in this volume has to do with modalities. Several years ago psychology texts discussed children who were "eye-minded" and those who were "ear-minded." These books were really talking about modes of learning. Most of the recent studies on this topic are directed toward finding the interrelationships of these and other modes of sensory learning. Robinson's study suggests that it is not advisable to teach groups in terms of particular modes but that it may be helpful to deal with a particular mode in case of an individual. Several investigators have found that both auditory and visual modalities grow in effectiveness as pupils pass through the grades, and some have found that aural presentations are more effective with retarded readers.

In the future we shall probably find out the favored mode or modes, if any, of individuals at the beginning reading stage and, perhaps, when starting work with seriously retarded readers. In case a predominant mode or modes are found, we will take advantage of these but will hasten to develop the intake of other modes of learning.

Television and computer learning in the future will make much more use of both aural and visual learning than our present textbooks do. The tactile sense may also be used, as in striking the keys in the talking typewriter and making responses on a screen with a light-projecting pen. Perhaps one of the outstanding advantages of electronic devices in the future will be that they will make greater use of a combination of sensory avenues to learning.

Striving toward individualized learning

The ungraded school and individualized instruction are both discussed earlier in this volume. These two forms of classroom organization, like the multigrade plan, the Joplin plan, and Trump's flexible scheduling plan, are attempts to break from the lockstep system of grades. By the year 2000 graded schools, which have been an invincible barrier to pupils' individual needs since 1840, will undoubtedly have been swept away. Furthermore, all children will not enter school in September. They may enter any time during the year when they happen to have a birthday, and this may be a second birthday or a third birthday.

An entirely new concept of school organization will be put into effect. To lay the groundwork and facilitate this new organization, school architecture must undergo innovative overhauling. The eggcrate school house with rooms to seat 30 children per grade will no longer exist.

One concept of new schools is the educational park with clusters of schools on a single large site that can accommodate several thousand children from a wide area.

Another concept is to have one large learning center in a town or in one section of a city with fingers extending out into the neighborhoods.

Whether or not we have educational parks or octopus-type schools, there will be changes in the new school buildings. Space will be made fluid and flexible by soundproof partitions that can be moved to make larger or smaller rooms as desired. Traditional classrooms will be replaced by instructional spaces designated as learning centers, seminar rooms, research areas, and learning laboratories.

Such architectural arrangements will make it possible for each child to have more individual attention and to progress at his own rate but still have opportunities for group communication.

Let us take a quick look at the way in which a learning program might function in such a school in 2000. This illustration is from *Man, Media and Machines,* an essay by Joyce (*2*). It describes what might take place in a school which has a computer support center, a self-instruction center, an inquiry center, a materials creation center, a human relations center, and a guidance and evaluation center.

For personnel this school would have specialists such as a computer technician and computer programers in the computer support center, and the materials creation center would be staffed with professional writers, artists, and audiovisual specialists.

The teaching staff for 200 elementary children consists of Harvey Thompson, who is the leader of an elementary school direct-instruction team of eight members; and Marge Wilson, the assistant team leader. Harvey and Marge are jointly responsible for the direction of the team and the continuing education of its members. He is a science specialist; she a specialist in reading.

Two other members of Harvey's team have professional status. George Bryant is a young teacher in the social sciences. He hopes to become a specialist in computer-assisted instruction (CAI), and Harvey and Marge arrange for him to work as much as possible with the computer support center. Florence Smith is a middle-aged woman who returned to teaching after an absence of several years. She expects to become a reading specialist; therefore, much of her inservice education is Marge's responsibility.

The team also includes four paraprofessionals, two college graduates, and two high school graduates.

Harvey and Marge deploy team members to cover the responsibilities required by their instructional plans. While certain kinds of teaching are done only by the professional team members or by professional teachers in the instructional support centers, all the team members, including the paraprofessionals, function in teaching roles.

Perhaps the example given is prophetic of types of new organization plans which will make it possible to give more attention to the individual needs of children.

The issue in 2000 will not be whether we use individualized instruction in reading or whether we use one of the different grouping plans which are being discussed at present. Individual instruction is assured with the new electronic devices. The issue will be whether we can balance individual instruction offered by technology with sufficient contacts with live teachers and peers to assure the human values that can result only from group interaction and personal contact.

Teacher education

The topic discussed in the previous chapter was, "Should Colleges Change their Curriculums in Preparing Teachers of Reading and Reading Specialists?"

By 2000 teaching as it is now conceived will be dead. The teacher will no longer be a dispenser of knowledge and a director of skill development. His major role will be that of a facilitator of learning, guiding learning in terms of individual children exposed to a rich learning environment. In order to assume this role he will need new knowledge, new skills, new competencies, and new attitudes.

The teacher-preparation colleges must meet this challenge. If the student teacher is to be prepared to be a facilitator of learning, vastly different experiences and courses must be given to him.

He will gain more experience with children by serving as a full-time interne in a school instead of doing practice teaching for an hour a day.

He will need courses in educational technology; in creating and writing materials to use in electronic devices; in diagnosing reading disabilities in depth; in conducting fruitful discussion designed to stimulate thinking; and in human relations to aid him in working in closer rapport with his pupils, his coworkers, and the parents of his pupils.

In addition to added activities and courses for teachers there will also be courses for aids and for paraprofessionals.

Yes, there will be a new day for teacher-preparation colleges, and they had better wake up to some of their new responsibilities.

Students who entered college in the fall of 1968 will begin teaching in 1972; and if they spend only forty years in the classroom, their teaching lives will have extended well into the twenty-first century.

In addition to new programs in preservice preparation we shall need new types of inservice courses to help those who are already teaching to keep pace with change.

Perhaps we should also have inservice courses for college professors. How can they prepare teachers to teach in the 1980's, 1990's and 2000's when many of them are teaching or directing teaching as their professors taught them in the 1930's, 1940's, or 1950's?

And, of course, we shall need many new kinds of inservice courses for teachers. With the aid of electronics we may have regional inservice courses similar to a program being implemented by the medical profession. Such a program, called the Intermountain Regional Medical Program, is having a tryout in five western states. This program will employ television, computers, and microwave radio to bring rural doctors and hospitals into partnership with topflight hospitals in metropolitan areas. Lectures will be given by prestigious doctors; patients will be diagnosed; remedies will be suggested; treatments will be demonstrated. All this will take place through electronic media which will enable doctors in distant places to hear and see the help given to them. By way of two-way radio-television hookup, provisions will be made for questions, answers, and discussions. The programs will include two such conferences a month for several months.

We have a lot to learn from the medical profession which preceded us by many years in doing fruitful research. In the future, perhaps, we may take a hint from their regional plan for upgrading types of inservice work with teachers and college professors, as well.

The human element

The seventeen current issues treated in preceding chapters of this volume have now been discussed and an attempt has been made to sketch briefly some of the future possibilities of each issue.

Now the writer would like to suggest a common denominator for all of these issues as they develop in the future—humaneness: human emphathy, human understanding, human consideration, human kindness. In this coming technological age, the human element will be needed as it has never been needed before.

We must learn how machines and human beings can live together and what things human beings can do better than machines. We may be sure that there will always be moral, social, and educational values which never can be developed through the use of machines but which from now to eternity must be achieved solely through association of human beings with other human beings.

It is in the human relations area that the future teacher of reading has her supreme role to play. There are the human relationships between teacher and child for which no automatic device can substitute: the growing together in understanding of teacher and pupil; the encouragement and sympathy of a warm, friendly teacher; the satisfaction of a smile or nod of approval; the soft touch of a hand on the shoulder when one successfully completes a difficult learning task; and the personal stimulation of a teacher who believes in the pupil and expects him to do his best. These personal relationships are far more potent in a learning situation and more lasting in memory than skills or subject matter. Such interactive relationships of a human teacher with a living pupil must always supplement inhuman, impersonal, automatons in teaching.

While the future ahead is startling, almost frightening, it is also fascinating and challenging. We may occasionally have heartbreaks and setbacks, but so shall we have successes and deep, abiding satisfactions.

But we do have a long way to go. At the moment it occurs to the writer that there is no better way to conclude this chapter than to quote from Robert Frost, slightly paraphrased:

To our youth we have a promise to keep,
And many miles to travel before we sleep,
And many miles to travel before we sleep.

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